

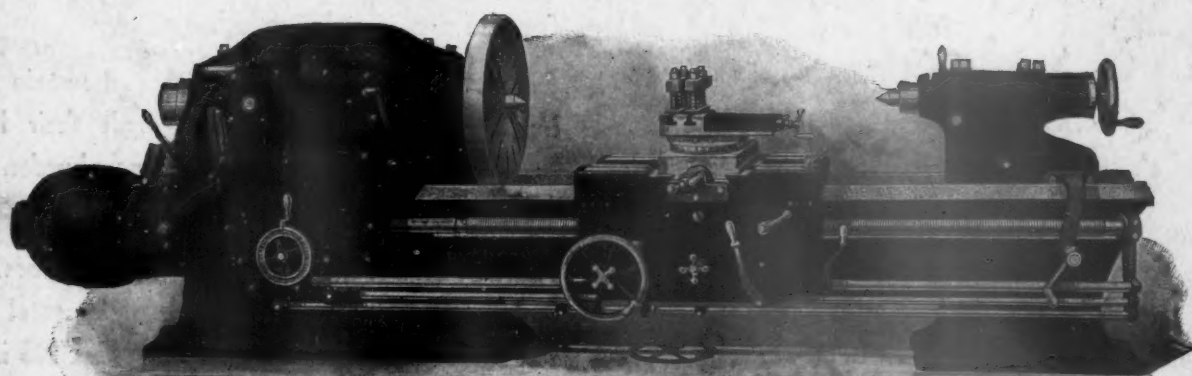
Railway Age

FIRST HALF OF 1920—NO. 24

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SIXTY-FIFTH YEAR

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EDITORIAL

Railway Age

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The annual bulletin containing tables showing length of railroad operated under the block system in the United

Block Signal Mileage 1920

States, prepared by the Bureau of Safety of the Interstate Commerce Commission, has appeared, somewhat earlier than last year. It shows a total increase, January 1, 1920, over January 1, 1919, of 1986.5 miles of road; but, as has been noted in connection with former reviews, this total is made up in such a way that the increases or decreases are of relatively small importance, except as they relate to automatic signals; the non-automatic are in too many cases operated under changeable or loosely administered rules. These unsatisfactory items have to do, usually, with lines of minor importance, but they affect the totals, all the same. In this year's report it appears that one company had been in doubt, as regards over 800 miles of line, whether it should or should not report the block system as in operation! The increase in automatic signals, 979 miles of road, is small, for reasons only too well known by everybody; but it is a long road that knows no turning, and we must get what comfort we can from the fact that the total this year, 37,969 miles, is 42 per cent greater than that at the beginning of the world war (26,570 miles on January 1, 1914). The small table, reproduced in our report, showing the principal increases in 1919, foots up 1,096 miles (117 miles more than the net total just mentioned), indicating, presumably, some errors in reporting. As for the future, the signal departments, like the other departments, are still awaiting the completion of the most difficult financial budgets ever known. In the meantime it seems appropriate to repeat the suggestion made in these columns last year (July 25, page 138) that the commission report more in detail concerning the use of the block system on American railroads, what practices are good, what are bad; and how, and where, and to what extent good practices are driving out the bad. The reports which have been made on numerous collisions have indicated the need of such a study and review. The annual statements are illuminating as regards quantity; let us turn for a time to the question of quality.

For purposes of accounting it is of importance that a nice distinction be made between expenditures for additions and

Accounting Rules and Betterments

betterments, and expenditures for maintenance. Broadly speaking, replacement in kind is maintenance, while replacement with a more expensive type of article is maintenance and betterment. Carried to its logical conclusion this leads to pretty fine distinctions and at times to what appears to be hair splitting. On the other hand on most roads a definite appropriation is made for maintenance and it is within the discretion of the engineering officer in charge of a division or a grand division to decide on just how portions of this appropriation shall be applied. Occasions arise when the officer in charge of maintenance work knows with a considerable degree of certainty that it would be economy in the long run to make a betterment at the same time that he is making a necessary replacement. For instance, a section of

track with continuous rail joints might be in need of a renewal of the joints and might be in such condition as to make it obvious that it would be an economy in the long run to use a somewhat more expensive joint to replace those taken out. The engineering officer, however, were he to follow his judgment would have to obtain a special appropriation for additions and betterments to cover the additional cost of the type of joint which he wanted to use in the renewal. Nevertheless, he might be quite certain in his own mind that there was no way in which he could spend his appropriation for maintenance more effectively than to pay the additional cost of the type of rail joint which he needed. The accounting rules were devised to enable the books to show exactly the distinction between renewals and betterments; that is, to accurately distinguish between capital charges and expenses. The rules which require a special authorization for betterment are made in order to insure the expenditure of new capital in accordance with a general plan worked out by the executive officers. Sound business judgment in the instance cited above appears to be hampered by these two necessary rules. One way of getting around this is to permit the maintenance of way officer to use a part of his maintenance allowance for additions and betterments, so long as the total amount that he spends does not exceed his maintenance allowance and provided, of course, that he keeps the auditor advised of the facts as to what is maintenance and what is betterments. The success of such practice depends partly on the quality of the judgment of the maintenance of way officer and partly on the closeness of relationship between officers directly in charge of maintenance work and their superiors and their executive officers.

The railways are now in the peculiar position of having more business than they have equipment or facilities with which to

A Problem for the Engineering Department

handle it and of having in readiness completed plans and budgets for large expenditures to amplify these facilities, and yet they are taking practically no steps to provide these facilities. The season for the inauguration of construction work is already so far advanced that the indications are that so little work will be undertaken this year as to be almost negligible. This anomaly is the outgrowth of the condition in which the roads were returned to their owners at the termination of federal control. While interesting, this situation is serious, for it means a continuation in an increasingly aggravated form of the handicaps under which the roads have labored for the last three years. However, there is another effect which, while not as serious from the standpoint of the roads as a whole, is of immediate concern to the engineering department which will necessarily be in charge of construction work whenever it is undertaken. This is the disintegration of the forces in this department on many if not most of the roads. Owing to the almost complete cessation of construction activities, the roads have not maintained their former organizations and many men are leaving railway for other service. Occurring as this does at a time when the field for engineers has widened greatly and the demand is increasing in proportion, the roads are facing the extreme difficulty if not the

actual impossibility of recruiting trained men in sufficient numbers to carry on the work in prospect whenever conditions change so that it can be undertaken. Indeed, forces have decreased to such an extent that on some roads difficulty is even now being experienced in securing sufficient men to handle the exceedingly limited amount of work at present under way.

One of the results of the war and federal management of the railroads was the introduction of Douglas fir ties on eastern roads. At the time that this innovation was effected it was considered by many to be purely an emergency measure, but now in the course of what we may term the period of reconstruction, certain conditions point to the continued use of Douglas fir to at least some extent by roads on the Atlantic seaboard. This has led some eastern engineers to question the durability of this timber when used so far from its native soil, but the investigations instituted as a consequence have resulted largely favorably to the merits of Douglas fir. It is an interesting commentary on this condition that almost exactly the same questions were raised with regard to the use of southern yellow pine in the north Atlantic states years ago when this material first became a competitor of the native hardwoods.

Douglas Fir Ties for Eastern Roads

There are a few roads which are making conspicuously good showing in 1920 earnings, both gross and net. Except for the few companies that have refused the government's guarantee, a good or bad showing in net earnings does not affect the corporation's income, and will not until after September. On the other hand, since March 1 the roads have been under private management and the earnings even in January and February were indicative of the individual earning power of the different properties and reflected only to a limited degree arbitrary conditions imposed by the United States Railroad Administration. It is rather interesting, therefore, to study the range of stock prices of some of these roads that have made conspicuously good showing and to compare them with roads where the earnings have followed a downward trend established in 1918. The Santa Fe in three months, January to March inclusive, earned \$14,297,000 net after taxes, compared with \$5,694,000 for the same period in 1919. The Illinois Central had \$4,385,000 net for the four months as against \$425,000 in 1919. Missouri Pacific had \$3,605,000 as against a deficit of \$185,000. The Cleveland, Cincinnati, Chicago & St. Louis had \$5,827,000 as against \$2,017,000. The St. Louis Southwestern had \$1,036,000 as against \$195,000, and the Southern Railroad had \$5,776,000 as against \$1,471,000. Atchison sold at about 84 in the early part of January, at 81 in the last of May, and as high as 86½ in March. Illinois Central sold at about 88 in January, 85 at the end of May and high for the year was 93¾ in March. Missouri Pacific was 26 in January, 25½ at the end of May, with a high of 31¾ at the end of February. Big Four was 45 in January, 48 in May, with a high of 55 in March. St. Louis Southwestern was 14 in January, 12 in May, with a high of 18 in February. Southern common was 22 in January, 22½ in May, with a high of 26¾ in March. The St. Louis Southwestern and the Southern are both companies which refused the government's guarantee for the current six months. In contrast to the good net earnings of the roads named, the Pennsylvania shows a deficit for the first three months of 1920 of \$14,566,000, after the payment of taxes, while in the corresponding three months of 1919 the road just about broke even after paying taxes. The New York, New Haven & Hartford

Earnings and Stock Prices

had a deficit in 1920 of \$1,342,000 and in 1919 of \$807,000. The Northern Pacific had \$2,382,000 net after taxes in 1920 and \$3,025,000 in 1919. Pennsylvania in January sold at 40¾ per \$50 share, at the end of May at 40 and had a high for the year of 43½. New Haven sold at 27¾ in January, 31 in May and 36¾ in March. Northern Pacific sold at 80¾ in January, 74¾ in May and at 84½ in March. There is no great contrast in trend of prices corresponding to the contrast in trend of earnings and this suggests that it is the uncertainty of the general railroad situation that is of outstanding importance in the trend of railroad stock prices at present.

Salaries of Railroad Officers

REPRESENTATIVE SIMS, who, on November 18 published in the Congressional Record a list of some 200 railroad officers who received in 1917 salaries of \$20,000 a year or more, has now published in the same way the entire list, compiled by the Railroad Wage Commission, of the railroad officers who were paid \$5,000 or more for that year, a part of which we reprint elsewhere in this issue. This list, from which the earlier one was taken, was furnished to the Congressman by Interstate Commerce Commissioner C. C. McChord, who was a member of the Wage Commission, which Director General McAdoo appointed early in 1918. It contains approximately 2,500 names. As Mr. Sims performed a real service in making public the original list, and thereby showing that only one man received as much as \$100,000 a year, the figure which a certain type of journalism has commonly used as representative of the salaries of railroad executives generally, he has performed a still greater service in making public the more complete list which shows how small were the salaries paid to railroad officers generally. As the Interstate Commerce Commission reports show that the average salary of the 7,500 general officers in 1917 was \$4,558, while the average for the 12,500 division officers was \$2,099, or less than the railway labor organizations now ask as a minimum for employees, it will be noted that the entire list compiled by the Railroad Wage Commission of the salaries of \$5,000 and over represents only the most highly-paid one-eighth of the total number of railroad officers.

The list is especially valuable because its publication makes possible for the first time some interesting compilations as to the exact compensation of railroad officers, which could not be made from the averages shown in the published official reports.

A classification of the salaries shown in the list made public by Mr. Sims shows that out of the total of 2,500 there were 781 who received less than \$6,000, 1247 who received less than \$7,000, and 1796 who received less than \$10,000. In other words, only about 700 received \$10,000 or over.

On the other hand, the list includes only two men shown to have received \$100,000 or over. One of these is R. S. Lovett, chairman of the Union Pacific, with \$104,000, and the other is J. M. Dickinson, receiver of the Chicago, Rock Island & Pacific, and we have been advised that the \$120,000 shown opposite his name was not his compensation for a year, but for the entire 26 months of his service.

There are 12 names in the list shown as having received \$75,000 or over (and this includes Judge Dickinson), 11 more as having received more than \$60,000 and less than \$75,000, 13 as having received \$50,000 to \$60,000, and 13 as having received more than \$40,000 and less than \$50,000. Only 33 individuals, therefore (aside from two law firms), were paid salaries of \$50,000 a year or over and the range for the highest executive officers of a road, president or chairman, is from \$5,000 to \$104,000.

The classification of the list by amounts is as follows:

Salary	Number	Salary	Number
Less than \$6,000.....	781	\$15,000 to \$19,999.....	166
\$6,000 to \$6,999.....	466	20,000 to 29,999.....	111
7,000 to 7,999.....	325	30,000 to 39,999.....	52
8,000 to 8,999.....	133	40,000 to 49,999.....	13
9,000 to 9,999.....	91	50,000 to 59,999.....	13
10,000 to 10,999.....	155	60,000 to 74,999.....	11
11,000 to 11,999.....	27	75,000 or over.....	12
12,000 to 12,999.....	88		
13,000 to 13,999.....	27	Total	2,492
14,000 to 14,999.....	21		

Without the slightest intention of doing so, Mr. Sims has completely exploded the idea that railroads pay fancy salaries generally. Doubtless he would consider any salary greater than the \$7,500 received by a Congressman as excessive, but an examination of the list as a whole shows that the great majority of railroad officers were paid salaries so pitifully low in proportion to their responsibilities that it is by no means surprising to note the large number of them that are continually leaving the railroad service for the much more remunerative positions held forth to them by industrial companies. The figures naturally look smaller now than they did during 1917 and many readjustments have been made in the pay of some of the lower-paid officers since that time, but, as it is well known that the Railroad Administration while it was in control was far less generous in its treatment of the railroad general officers than it was in dealing with the employees, it is believed that very little change has been made in the average figures. This belief is supported by the fact that the Railroad Administration payroll for January, 1920, showed the compensation of general officers on the basis of an average of \$4,313 for a year, as compared with \$4,558 for the calendar year 1917, the last year of private operation. The 1917 figures, of course, include the more highly-paid executive officers who were not included in the Railroad Administration payroll. The division officers fared better, their average increasing from \$2,099. to \$2,989.

Increased Freight Handled In Spite of Recent Strikes

THERE OFTEN IS A WIDE DIFFERENCE between popular impressions regarding matters of importance and the actual facts regarding those matters. There is a popular impression that the recent strikes on the railroads almost stopped the movement of freight traffic in many parts of the country. Surprising as it may seem, the fact is, as President S. M. Felton of the Chicago Great Western has pointed out in a recent public statement, that from the week ended March 27, when the strikes began, to the week ended May 22, the railways of the country handled 370,359 more carloads of freight than in the same months of 1919.

According to statistics compiled by the American Railroad Association covering the operations of all but a few of the large systems, the number of carloads moved in the nine weeks ended May 22, 1919, was 5,303,951, while the number moved in the corresponding weeks of 1920 was 5,979,310. Furthermore, there were only two individual weeks during this period when the railways moved less freight than in 1919, these being the weeks ended April 17 and April 24, when the strikes were at their height. When the strikes began the railways were handling an almost record-breaking business, the number of cars loaded in the week ended March 27 being 741,502. In the week ended May 22, however, normal conditions in the handling of traffic had been so far restored that the number of carloads handled was 750,978.

It is true, of course, that the business moved in 1919, with which comparison is made, was substantially smaller than that handled in 1917 and 1918. But the fact that in spite of the strikes the railways actually did during this

period handle a substantially larger amount of business than in 1919 demonstrates the absurdity of the charge made by some persons and newspapers that the strikes caused them to collapse. The amount of business moved in January, February and March was larger than in either 1917 or 1918, and therefore, in spite of the strikes, the total amount of business moved from January 1 to the end of May probably was larger than ever was moved in any earlier years, except in 1917 and 1918. The railway strikes interfered seriously with the production of coal, but statistics of the Geological Survey show that between January 1 and May 22 the amount of bituminous coal produced was 35,000,000 tons more than in the same period of 1919, and it probably was larger than ever was produced in any year, except in 1917 and 1918.

If the public and public authorities could be made to appreciate the true significance of the effects produced upon the industries and finances of the United States by the railroad strikes, the chances of a real solution of the railroad problem would be greatly improved. The effects of the strikes upon the total amount of traffic moved in the first half of this year were comparatively small, and yet they demoralized industry and business. The reason should be obvious. The railways were handling a maximum business when the strikes came, and yet much more business was being offered to them than they could handle. When the traffic they were already unable to handle because of the inadequacy of their facilities had added to it a substantial amount of business which they were unable to handle because of the strikes, the total amount of business offered to them which they were unable to handle became very large, and it was the combined effect of the already existing inadequacy of facilities and the strikes which caused the serious troubles.

In considering how much business the railways will be able to handle in future, nothing could be more unsafe than to assume that they will be able at all times to operate to their capacity. There always have been and always will be developments rendering it impracticable for them to operate to their capacity. Therefore, they should, under normal conditions, have in reserve a substantial amount of surplus capacity. As long as they do not have any surplus capacity in reserve, as is the case now, any development which interferes with their working to the limit of their capacity will have effects as harmful and dangerous as those produced by the recent strikes.

Only a great enlargement of the capacity of the railroads can prevent the country from being brought to industrial and financial disaster by shortage of transportation facilities, sooner or later.

Boston & Maine

AFTER THREE YEARS of receivership the Boston & Maine was reorganized on December 1, 1919, and when the government discontinued operation on March 1, the new company took over the property. This consisted of 2,258 miles of railroad, of which 1,705 miles were owned and the remainder leased. The Fitchburg, the Boston & Lowell, the Concord & Montreal, the Connecticut River, the Lowell & Andover, the Manchester & Lawrence, and the Kennebunk & Kennebunkport, formerly leased, are now owned, and the reorganization thus added 1,071 miles to the mileage formerly owned by the Boston & Maine. The capitalization outstanding on the property consists of \$81,473,000 of various classes of stock, and \$100,232,000 (exclusive of bonds in sinking fund) funded debt. The tentative valuation of the property has been completed and this shows a cost of reproduction plus the market value of land as of June 30, 1914, of approximately \$231,700,000, or about \$50,000,000 more than the capitalization.

James H. Hustis, who was receiver and was director of the

New England District under the railroad administration, was elected president of the new company, and in his annual report for 1919 says "a general increase in rates, which would provide the railroads as a whole with an income equal to 5½ per cent [on their valuation] would not yield this return to the Boston & Maine." Assuming, however, that the new rates fixed by the Interstate Commerce Commission will yield even 4 per cent on the tentative valuation of the Boston & Maine there would be net income available for interest charges and dividends of approximately \$9,268,000. Interest charges amount to \$4,402,000, and dividend requirements on the preferred stock exchanged for leased line stock amount to \$2,036,000, a total of about \$6,500,000.

In 1919 the road under government operation earned a gross revenue of \$72,584,000, and after paying operating expenses and taxes, had a remainder of \$3,611,000. It is rather interesting to note that the rental paid by the government, based on the test period, amounted to \$9,383,000, which compares with \$9,268,000 as the estimate made above for net earnings if rates are raised sufficient to yield the Boston & Maine 4 per cent on its valuation.

Extended comment has previously been made in these columns on the Boston & Maine reorganization. It was a thoroughly sound one, based on some sacrifices by holders of the old leased line stock, but these sacrifices were fully justified by the future prospects of the property. The balance sheet of the reorganized company, as of December 31, 1919, shows cash on hand amounting to \$1,914,000, and total current liabilities of \$3,417,000, which includes only \$701,000 loans and bills payable. The amount owed by the government to the company was \$22,784,000, and the amount which the company owed the government was \$14,432,000. The rental received from the government, together with other income, amounted to \$10,224,000, and from this was paid corporation expenses, interest charges and the dividends on the five classes of first preferred stock which was exchanged for leased line stocks. A balance of \$525,000 remained to transfer to the credit of profit and loss.

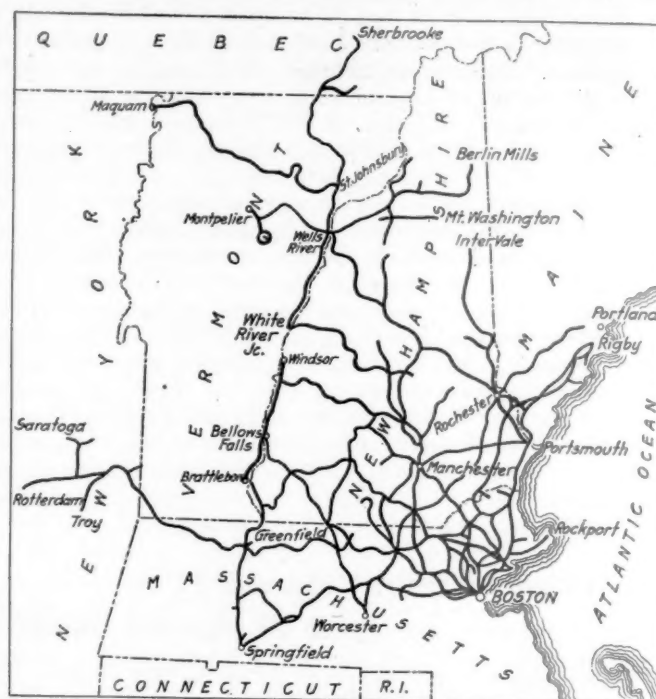
In 1918 the Boston & Maine was being operated under peculiarly difficult conditions. In 1919 these conditions had been materially improved, and this fact is reflected in operating expenses. Maintenance of way and structure cost \$9,612,000 in 1919, a decrease as compared with 1918 of \$450,000. Most roads, of course, are showing large increases in maintenance of way expenses compared with 1918. The items which show largest decreases are bridges, trestles and culverts, track laying and surfacing, and removing snow, ice and sand. This latter item alone shows a saving of \$408,000. There were, of course, offsetting items, notably the increase of \$384,000 in the amount spent for rail and \$166,000 in the amount spent for other track material.

Maintenance of equipment in 1919 was \$15,288,000, an increase of \$1,056,000 over 1918. Wage increases of shop forces and continued increase in the cost of materials were the reasons for the increased cost of maintenance of equipment.

Transportation expenses amounted to \$38,438,000, an increase of only \$770,000 over 1918. A large saving was made in the cost of fuel. This cost amounted to \$7,421,000 in 1919 or \$1,664,000 less than in 1918. The principal offsetting items were increases in the pay of station employees, trainmen, and crossings protection, with a large increase paid for loss and damage to freight. It is probable, however, that this was due to the payment in 1919 of claims which originated in 1918. Railroad conditions in New England in the winter of 1917 and 1918 were so congested that an entirely abnormal condition as regards loss and damage to freight is not to be wondered at.

In 1919 the total tonnage of freight carried was 26,516,000 or 11.94 per cent less than in the previous year. The average length of haul, however, was 124 miles, an increase of

a little over four miles; so that the ton mileage decreased by only 8.84 per cent train loading showed an improvement. The average tonnage of revenue freight per train was 448 in 1919 as against 426 in 1918, an increase of 5.29 per cent. There was a slight falling out in car loading. The average number of tons per loaded car was 22.07 in 1919 and 22.61 in 1918. The average revenue per ton per mile received by the Boston & Maine was 1.315 cents, an increase of about 10 per cent over 1918. The average revenue per passenger per mile was 2.233 cents, an increase of 3.48 per cent. The freight revenue per ton per mile on the Boston & Maine looks high when compared with a road having a longer average haul and a large proportion of coal, but it must be remembered that the configuration of the road is such that a considerable part of its business is in the nature of a switching business rather than a through haul, and,



The Boston & Maine

furthermore, the percentage of coal business is small. In 1919 only 25 per cent of the total tonnage carried was products of mines and a large part of this was coal for domestic consumption, which means a few car loads of coal in trains of merchandise freight, and does not mean solid trains of coal such as can be run on the New York Central or Pennsylvania.

The future of New England is linked with its railroads. Rates into and out of New England can not be so high as to put the industrial prosperity of that section of the country in jeopardy. What the New England roads, therefore, must hope for is not a great increase in the through rate in which they participate but allotment to them of an increased proportion of a through rate which is not high enough to seriously hurt New England's industry.

The following table shows the principal figures for operation of the property by the government. This is not the corporation income account.

	1919	1918
Mileage operated	2,258	2,258
Freight revenue	\$43,303,091	\$43,085,382
Passenger revenue	21,798,847	19,039,026
Total operating revenues	72,583,880	69,911,393
Maintenance of way and structures	9,566,430	10,018,503
Maintenance of equipment	15,216,933	14,178,990
Traffic expenses	495,804	480,809
Transportation expenses	38,251,926	37,546,129
General expenses	2,049,136	1,827,525
Total operating expenses	66,023,668	64,490,678
Taxes	2,393,099	2,130,493
Federal net income	3,610,995	3,440,593



Ore Train on the Butte, Anaconda & Pacific. Northern Pacific Passenger Train in Background. Other Tracks Are Those of the St. Paul

Electric Operations—Butte, Anaconda & Pacific*

The Capacity of the Smelter Hill Line Has Been Increased 108 Per Cent Since the Road Was Electrified

By F. W. Bellinger

Electrical Superintendent, Butte, Anaconda & Pacific

THE BUTTE, ANACONDA & PACIFIC was built in the year 1892, principally for transfer service between the Anaconda Copper Mining Company's mines in Butte and smelter at Anaconda. The tracks connecting these two cities are approximately 26 miles long, but the yards and sidings included in the present electrification bring the total mileage up to 120.

Until the Butte, Anaconda & Pacific decided upon the electrification of its lines, for reasons of economy, it is doubtful if any such step had been made by a steam railroad. The electrification of various steam roads had been for the purpose of obviating some special condition, such as smoke nuisance in tunnels or cities, congested terminals, or to accomplish some special work for which a steam engine was not adapted.

Work on the electrification was begun in the spring of 1912 and regular operation was commenced 18 months later. Direct current at 2,400 volts was used, and 17 electric locomotives operating in pairs replaced 28 steam engines of the Mastodon type, and a substantial reduction, both in the number of crews required and in the amount of overtime worked, was effected.

Power is taken from the Montana Power Company's sub-stations at Butte and Anaconda. The advantage of purchasing electric power from this large operating company, instead of developing the required power independently, was readily apparent in the case of the Butte, Anaconda & Pacific. The road was relieved of all first cost of development and transmission of power and all operating expense up to the point of delivery at the two sub-stations. Butte sub-station is equipped with three 1,000 kw. motor-generator sets, exciter units and switchboard appurtenances, while at Anaconda the sub-station is equipped similarly, with the exception of having four 1,000 kw. motor-generator sets.

The railway makes every effort to operate its sub-stations

at as high a load factor as possible and at a leading power factor. Under favorable conditions it is possible to make a 42 per cent load factor. The nature of the haul on this line is such as to make it impossible to despatch all trains, although good results are generally obtained, even in the switching service, by the co-operation of the yardmasters.

On the main line freight service between East Anaconda and Rucker, a distance of 20.1 miles, the standard train, west-bound, that had been handled with steam was 50 cars, aggregating 3,500 tons, and the average running time for such a train, where no stops were made, was about 1½ hours, corresponding to an average speed of approximately 13.4 miles per hour. The electric locomotives now haul a trailing load of 4,600 tons at a speed of 16 miles per hour.

On the Smelter Hill line, a length of approximately seven miles with a grade of 1.1 per cent, 25 ore cars averaging 70 tons each and making a trailing load of 1,750 tons form a drag. The round trip is made in about one hour, thus making it possible to make eight round trips per day, or a delivery of 200 cars in 10 hours. As compared with this, a steam engine handled, under favorable conditions, 16 cars, or a trailing load of 1,120 tons, and made six round trips in 10 hours, or a delivery of 96 cars per day. Therefore, we have an increase of 108 per cent in this particular service, using the same crew and working the same hours as worked by the steam engine crew.

A comparative statement showing the cars handled per day for the months of April, 1917-1918, is as follows:

	1917	1918
Cars per day.....	1,043	866
Tons per day.....	44,597	37,917
Tons per train, east.....	1,449	1,560
Tons per train, west.....	4,198	4,625
Tons per train, average.....	2,797	3,098

While these figures are representative of the average business handled, they are not taken from the best month's per-

*A paper presented before the 43rd annual convention of the National Electric Light Association held at Pasadena, Cal., May 18-22.

formance, and are shown for the purpose of throwing light on the cause for electrifying. In handling the tonnages shown above, over a single-track line with limited sidings, a marked improvement was shown in the number of delays as well as in overtime to the train crews. A similar saving has been very noticeable in the mechanical department.

The figures in the table give an idea as to the cost of locomotive maintenance.

These figures will possibly carry more weight when compared with similar figures obtained from a steam locomotive performance sheet on this road for the year 1909. Maintenance per locomotive mile in cents for steam locomotive operation for the year 1909 was 16.1. Wages and materials have increased to a considerable extent since 1909, so that the ratio of costs is understated by the above figures.

The average time for each locomotive in the shop per year is ten days, while the shortest is four days. During this time

tudinal ducts placed inside the coach. The heater, principally because of high voltage, is located below the floor.

Five groups of five lamps in series are used to illuminate each coach. The voltage is 600 and is obtained from the dynamotor.

One of the first questions all visitors ask is, "How do your commutators wear?" To date we have not turned a single commutator on account of wear. We have turned a very few due to injuries received when inspection plates were allowed to fall in on the commutators. The wear is just appreciable at this time. The color could not be improved, and there is no evidence of burning or flash-overs. We are using an electro-graphitic brush which gives very good mileage and very little breakage.

Like all electric roads, we have armature trouble. However, it amounts to so little that we keep one man as an armature winder, and his time is spent principally on other equip-

	1914	1915	1916	1917	1918	1919
Number electric locomotives.....	17	18	21	24	28	28
Average locomotive weight, tons.....	80	80	80	80	80	80
Repairs in dollars.....	27,811	35,253	49,811	55,846	54,167	35,264
Freight revenue miles.....	321,946	317,595	505,162	412,509	413,519	226,851
Passenger revenue miles.....	65,428	87,625	100,290	94,659	80,020	90,805
Switch revenue miles.....	136,892	161,871	404,356	367,690	324,322	197,838
Mixed and special revenue miles.....			616	456		
Total revenue miles.....	524,266	567,091	1,011,424	875,314	817,861	515,474
Non-revenue miles.....		5,507	2,477	10,796	2,957	1,142
Total locomotive miles.....	524,266	572,598	1,013,901	886,110	820,608	516,816
Maintenance per locomotive mile in cents.....	5.3	6.16	4.91	6.3	6.4	6.8

a general overhauling is given to the mechanical and electrical equipment. The time for electrical inspection and repairs varies with the class of service on which the locomotive has been working. In general, the electrical work is completed in less than two days. Bad rheostat connections and tight contactor pins are the only cause for electrical work in the cab.

Our electric locomotives are inspected approximately every 40 days. Engines working at Butte or on Butte hill have no care except oiling and renewal of brake shoes. The maximum number of days which a locomotive has been away from the shop is 70, working two 10-hour shifts per day. Monthly inspections, as we call our 40-day periods, are made over a cinder pit, summer and winter. Two electrical men inspect a double unit in 20 minutes to an hour, making all necessary repairs and adjustments. One machinist inspects the mechanical parts in 20 minutes to an hour.

Seven machinists, two machinists' apprentices, four helpers, two drill pressmen, one wiper, one oiler, one boilermaker and his helper, three blacksmiths and three helpers, who work on steel cars principally, a pipe fitter and his helper, and a carpenter comprise the machine shop crew.

Three linemen are employed to maintain the overhead wires and feeders, and the average cost of maintenance of overhead system per mile per year for the past four years has been \$137.57.

Steam engineers are used on the electric locomotives, and it has been our experience that this is the best practice. In the beginning an experienced man made several trips with each engineer before he took charge of an electric locomotive. The principal trouble they had was with the controller. The habit of pulling the throttle out to almost any position is one that is hard to break. Lectures were given to instruct the men in the operation of the locomotives and to give a practical working knowledge of the equipment in general.

It may be of interest to know how we heat our coaches. Each coach heater is of 25-kw. capacity, having a thermostat control and operated at 2,400 volts. The contactor control for each equipment receives a potential of 600 volts from a dynamotor located on the locomotive. Fresh air is introduced into the heater by means of a fan, and after being heated to a temperature of 100-105 deg. C, is forced out through longi-

ment than armatures. Recently we went one year and 11 months without an armature failure.

In conclusion, we can sum the matter up by saying that for our service the electric locomotive is in every respect superior to the steam engine.



Photo by "International"

Students of the Polytechnic Institute of Brooklyn Get Practical Lessons in Long Island Railroad Shops

Salaries of Railroad Officers in 1917

Compilation Made by McAdoo's Wage Commission Made
Public in Congressional Record

REPRESENTATIVE THETUS W. SIMS, of Tennessee, who on November 18 published in the Congressional Record a list of the salaries of \$20,000 and over paid by the railroads in 1917 [published in the *Railway Age*, October 10, 1919, page 751], taken from a compilation made by the Railroad Wage Commission in 1918, has now published the complete list then compiled by the commission showing salaries of \$5,000 a year and over, furnished to him by Interstate Commerce Commissioner McChord, who was a member of the wage commission.

The list as published in the Congressional Record contains many inaccuracies and some obvious typographical errors in the names of men and of railroads, which we have endeavored to correct. It also contains some apparent discrepancies in cases where a man's name appears more than once. Where a man received a salary from two or more companies, in some instances the amount which he received from each company is shown and in others the total is given. Usually a man who left one company during the year to become connected with another is shown only in the latest position, but in some cases his salary for a year is reported and in others apparently it is shown only for the part of the year, which may account for the inclusion of amounts less than \$5,000. But in one instance, H. E. Byram is listed both as vice-president of the Burlington and as president of the Chicago, Milwaukee & St. Paul, although he left the Burlington in the latter part of 1917. J. M. Dickinson, receiver of the Chicago, Rock Island & Pacific, is listed as having received \$120,732, but as the *Railway Age* was advised after the publication of the list last November, this covered 26 months of service and was not an annual salary. The list contains approximately 2,500 names, but we publish below only the names of men receiving \$10,000 and over and less than \$20,000.

List of railroad officials showing title, railroad, and total compensation during year ending Dec. 31, 1917

Abney, B. L., chief counsel South Carolina, Southern.....	\$10,000.00
Adams, H. C., president, Springfield Term.....	12,000.00
Adams, H. M., vice-president, traffic manager, Mo. Pac.....	16,750.00
Ainsworth, Dr. F. K., chief sur. and manager, Southern Pacific.....	12,060.00
Alden, E. H., secretary and assistant treasurer, Norfolk & Western.....	12,030.00
Alfred, Frank H., president and general manager, Pere Marquette.....	18,505.15
Allen, L. M., passenger traffic manager, C. R. I. & P.....	10,333.30
Allen, Louis B., general manager, C. B. & Q.....	11,024.97
Andrews, Frank, general counsel and chairman of board, N. O. T. & M.....	12,000.00
Ansley, Harrie C., treasurer, Southern.....	15,620.00
Apperson, A. B., special representative, Utah.....	15,000.00
Axtell, Decatur, vice-president and chairman valuation commission, C. & O.....	17,041.70
Bailey, W. E., general auditor, A. T. & S. F.....	14,250.00
Baird, F. C., freight traffic manager, B. & L. E.....	12,025.04
Baird, John B., freight traffic manager, Northern Pacific.....	10,000.00
Baker, Horace, general manager, Southern.....	15,000.00
Baker, James A., receiver, I. & G. N.....	12,000.00
Baldwin, A. S., chief engineer, I. C.....	12,000.00
Baldwin, Lewis W., vice-president and general manager, C. of Ga.....	13,416.65
Baldwin W. W., vice-president, C. B. & O.....	15,000.00
Bankard, E. H., purchasing agent, B. & O., acting purchasing agent C. H. & D.....	15,750.00
Bardo, Clinton L., assistant to president and general manager, N. Y., N. H. & H. Central New England.....	17,696.66
Barger, Milton S., treasurer, Mich. Central, C. C. C. & St. L., Ind. Har. Belt, Rutland R. R., T. H. & B. K. & M. Ry. Co., Clearfield Bit. Coal Corporation, Merchants' Des. T. Co., Lake E. & W. R. R., T. & O. Cent., Western T. Co., N. Y. State Rys., N. Y. & H. R. R.....	18,000.00
Barnwell, W. G., assistant to freight traffic manager, A. T. & S. F.....	10,020.00
Barrett, R. W., assistant general solicitor, Lehigh Valley.....	10,000.00
Bates, Elmer P., assistant freight traffic manager, Pennsylvania.....	10,200.00
Baxter, R. W., vice-president and general manager, Alaska S. S. Co.....	14,400.00
Beacon, T. H., general manager, C. R. I. & P.....	12,120.00
Beardsley, W. H., president, Fla. East Coast.....	18,000.00
Beckwith, J. P., vice-president, Fla. East Coast.....	15,750.00
Begien, R. N., general manager, B. & O.....	14,500.00
Bentley, Harry T., superintendent motive power and machinery, C. & N. W.....	10,000.00
Beymer, W. V., comptroller, Ill. Central.....	12,265.00
Blabon, Joseph W., vice-president, C. G. W.....	12,010.00

WASHINGTON, D. C.

Black, William Joseph, passenger traffic manager, A. T. & S. F.....	10,800.00
Blair, George A., assistant freight traffic manager, C. M. & St. Paul.....	11,000.00
Blake, C. O., attorney for Oklahoma, C. R. I. & P.....	10,000.00
Blanchard, E. C., general manager, Northern Pac.....	15,030.00
Blount, William Alexander, general counsel, Fla. East Coast.....	10,000.00
Boles, E. H., general solicitor, Lehigh Valley.....	17,525.00
Bowen, Arthur P., director of purchase, Pullman Co.....	19,000.00
Bower, W. C., purchasing agent, N. Y. C.....	10,000.00
Boyle, Egell, Houston & Grover, general attorneys, S. A. & A. P.....	12,500.00
Bracken, E. P., vice-president, C. B. & Q.....	19,749.99
Brand, R. A., vice-president, Atlantic Coast Line.....	10,300.00
Bratnober, C. P., receiver, M. St. P. Rochester, receiver, Duquesne El. Trac. Co.....	15,600.00
Brenner, W. H., president, Minn. & St. L.....	15,373.29
Brennan, T. F., vice-president, B. R. & P.....	10,333.33
Brigham, Edmund D., assistant freight traffic manager, C. & N. W.....	11,000.00
Bright, Alfred H., general counsel, M. St. P. & S. S. M.....	13,160.00
Brister, Chas. J., traffic manager, C. C. C. & St. L., C. N.....	12,320.00
Bronner, E. D., vice-president and general manager, Mich. Cen. Bronson, Miles, general superintendent El. division, manager Grand Central Terminal, N. Y. C.....	12,000.00
Brown, B. H. Innes, advisory counsel, S. A. L.....	15,000.00
Brown, Clyde, general solicitor, N. Y. C.....	15,000.00
Brown, Edward L., president, D. & R. G.....	10,766.11
Brown, F. V., general attorney, Great Northern.....	12,000.00
Brown, S. W., assistant to general manager, Mich. Central.....	10,000.00
Bryson, Joseph M., general counsel, Mo., Kans. & Texas.....	18,000.00
Buck, Gordon M., assistant general counsel, Southern Pacific.....	15,820.00
Buckingham, E., vice-president and general manager, Union Stock Yards.....	10,000.00
Bunting, Carroll M., comptroller, Pennsylvania.....	14,000.00
Bunting, Guy J., comptroller, C. M. & St. Paul.....	10,000.00
Burch, Charles N., general solicitor, Yazoo & Miss. Valley.....	12,000.00
Burlingham, Veeder, Master & Fearey, solicitors, Pennsylvania.....	17,000.00
Burnett, Edmund T., purchasing agent, N. & W.....	10,000.00
Caldwell, John D., secretary, C. & N. W., C. St. P., M. & O.....	14,060.00
Calkins, R. M., vice-president, C. M. & St. P.....	12,000.00
Calloway, W. R., general passenger agent, B. & O.....	10,000.00
Campbell, D. W., assistant general manager, S. P.....	12,000.00
Campbell, Edw. T., general traffic manager, Erie.....	12,000.00
Campbell, George H., assistant to president, B. & O.....	14,159.00
Cannon, L. G., vice-president and general counsel, Nev. Northern.....	15,000.00
Caples, Martin J., vice-president, Hocking Valley, C. & N. O., C. & O., B. C. D. & W. Co., Pomeroy Belt, Toledo Term.....	15,846.95
Carr, Lewis E., resident counsel, D. & H.....	12,000.00
Carroll, L. S., general purchasing agent, C. & N. W.....	15,000.00
Carson, H. M., G. S. of C. G. Div., Penn.....	10,800.00
Carter, B. & Sons, solicitors, Pennsylvania System, B. C. & A. R. R., M. D. & V.....	11,600.00
Carter, S. M., general counsel, Maine Central.....	12,184.00
Cass, Louis Stephen, receiver, K. C. N. W.....	10,000.00
Church, Samuel H., secretary, Pennsylvania, P. C. C. & St. L.....	10,916.70
Churchill, Chas. S., assistant to president, Norfolk & Western.....	13,992.00
Clark, Byron, attorney for Nebraska district, C. B. & Q.....	12,000.00
Clark, Chas. A., treasurer, Northern Pacific.....	10,000.00
Clark, Elroy N., general attorney, Denver & Rio Grande.....	10,000.00
Clark, F. H., general superintendent, M. P., B. & O.....	15,000.00
Cobb, Cobb, McAllister, Fernberg & Heath, attorneys, Lehigh Valley.....	16,845.00
Cobb, Wheelwright & Dillo, attorneys, Great Northern.....	11,000.00
Cochrane, John T., receiver, A. T. & N.....	12,000.00
Cockrum, John B., general attorney, Lake Erie & Western.....	10,000.00
Coleman, B. Dawson, president, Cambria & Indiana.....	10,000.00
Collins, E. S., president, chief engineer, general manager, Sheffield & Tionesta.....	12,000.00
Collins, M. J., general purchasing agent, A. T. & Santa Fe.....	10,000.00
Connell, Joseph A., district attorney, C. B. & Q.....	11,333.32
Connors, Maurice S., general manager, Hocking Valley, W. & J. Belt, Pomeroy Belt.....	10,050.00
Constans, O. A., freight traffic manager, B. & O.....	10,810.00
Copeland, Edw. L., secretary and treasurer, A. T. & Santa Fe.....	12,750.00
Coppell, Arthur, vice-president, Denver & Rio Grande.....	14,583.33
Corthill, A. B., chief engineer, Boston & Maine.....	10,000.00
Cotter, S. E., general manager, Wabash Ry.....	12,000.00
Cotter, Wm., president and general manager, St. L. & O. F. Manufacturers.....	12,000.00
Coughlin, W. G., engineer, maintenance of way, Pennsylvania.....	8,400.00
Countryman, M. L., general attorney, Great Northern.....	12,000.00
County, A. J., vice-president, Pennsylvania, Long Island, Wash. Southern.....	17,400.00
Coxe, Jo. W., comptroller, Norfolk & Western.....	10,000.00
Cravath & Henderson, counsel, New York division, B. & O.....	10,000.00
Cravath & Henderson, general counsel, Missouri Pacific.....	14,583.31
Crawford, D. F., general manager, Pennsylvania West.....	15,000.00
Crosby, Geo. H., vice-president and secretary and treasurer, C. R. I. & P., P. & B. V., Ark. & Memphis.....	19,260.00
Crosby, G. H., freight traffic manager, C. B. & Q.....	12,000.00
Croxton, D. T., president, Cuyahoga Valley.....	11,666.62
Cushing, Hopkins & Lamb, counsel, Erie.....	13,000.00
Cutter, M. B., president, Tonopah & Goldfield.....	15,000.00
Cutts, Geo. T., comptroller and chief accounting officer, Mo., Kan. & Tex.....	12,000.00
Dalzell, Fisher & Hawkins, district solicitors, Pennsylvania Co., P. C. C. & St. L.....	10,000.00
Daly, John W., passenger traffic manager, N. Y. Cen. lines, N. Y. Cen. Mich. Cen., P. & L. E.....	12,000.00
Daniels, F. B., general solicitor, the Pullman Co.....	19,000.00
Davant, T. S., vice-president, traffic, Norfolk & Western.....	17,500.00
Davis, James O., general attorney, Chicago & N. W.....	15,000.00
de Forest, Henry W., vice-president and director, South. Pacific.....	13,270.00
de Forest, Robert W., vice-president and general counsel, Cen. R. R. Co. of N. J., L. & W. B. Coal Co.....	18,000.00
Delano, Lyman, vice-president, Atlantic Coast Line.....	11,113.37

Denegre, Leovy & Chaffe, general attorneys, Southern Pacific, M. L. & T. R. R. & S. S.	15,000.00	Hodgdon, William, traffic manager, Pennsylvania, Pitts. Cin. Chi. & St. L.	16,000.00
D'Heur, Allard, manager fuel-oil department, Southern Pacific, Kern T. & Oil Co., Asso. Pipe Line Co.	10,120.00	Hodges, W. E., vice-president, A. T. & S. F.	16,250.00
Dillingham, B. F., president, Oahu Ry. & Land Co.	10,000.00	Hogeland, Albert H., chief engineer, Great Northern	15,000.00
Dinkey, John Franklin, auditor and treasurer, B. R. & P.	15,000.00	Holden, James F., vice-president, Kans. City Southern	15,000.00
Douglas, Alexander, consulting auditor, St. L. & Santa Fe	12,200.00	Holdredge, G. W., general manager, C. B. & Q.	18,000.00
Downing, W. C., general superintendent, Pennsylvania	10,125.00	Holmes, George, general attorney, C. R. R. of N. J., Lehigh & Wilkes-Barre, N. Y. & Long Branch	13,010.00
Drew, J. G., vice-president, Missouri Pacific, Sou. Ill. & Mo. Bridge Co.	19,933.33	Hood, William, chief engineers, Southern Pacific	14,220.00
Dudley, F. M., general attorney, C. M. & St. P.	10,000.00	Hopkins, L. N., purchasing agent, C. B. & Q.	12,000.00
Dumble, E. T., consulting geologist, Southern Pacific, Rio Bravo Oil Co., East Coast Oil Co.	12,020.00	Horton, Walter S., general attorney, Illinois Central	18,000.00
Duncan, W. M., president and director, Wheeling & L. E.	15,560.00	Hough, William, general auditor, Pullman Co.	14,000.00
Dunlinson, George, Jr., assistant to general manager, Norfolk & Western	5,447.73	Houghton, Fred B., freight traffic manager, A. T. & S. F.	12,833.28
Dunkle, H. O., assistant to president, Erie	10,000.00	How, Charles A., general purchasing agent, Mo. Pacific	10,100.00
Dunlap, Robert, western solicitor, A. T. & Santa Fe	13,500.00	Howland, T. S., vice-president, secretary-treasurer, C. B. & Q.	15,000.00
Dunlop, Patrick T., general superintendent motive power, St. L. Santa Fe	10,000.00	Hudson, Woodward, general counsel, Boston & Maine	18,000.00
Dyer, J. H., assistant general manager, Southern Pacific	10,020.00	Huff, Charles C., general solicitor for receiver, Mo. Kans. & Texas, Wich. Falls & N. W.	12,000.00
Dynes, O. W., commerce counsel, C. M. & St. P.	10,000.00	Hughes & Dorsey, general attorneys, Union Pacific, Denver U. Term.	14,000.00
Edwards, Thomas O., auditor Pacific systems, Southern Pacific, Associated Oil Co., Associated Pipe Line Co.	10,670.00	Hughes, Andrew S., general traffic manager, Denver & Rio Grande	12,000.00
Eldridge, W. T., president, general manager and treasurer, Sugarland	12,000.00	Hulme, Thomas W., real estate agent, Penna. Rd. Co.	17,000.00
Elliott, George B., general counsel, director maintenance of electrical construction, Atlantic Coast Line, A. L. & I. Co., W. Ry. Bridge Co., L. & N., Belt Line, C. & W. C. So. Car. Pac., C. U. S. Co., N. W. Ry., S. C. E. Car L. & Imp. Co.	13,343.57	Humphrey, Alex P., general counsel, Southern Ry. & Ind. Term.	13,650.00
Elliott, Howard, chairman executive committee, Northern Pacific	18,180.00	Hunter, George W., receiver, La. & N. W.	11,200.00
Elliott, J. H., general manager, Texas & Pacific	10,010.00	Hustis, G. E., general auditor, Del., Lack. & Western	10,321.32
Emerson, George H., general manager, Great Northern	16,021.44	Ingalls, G. H., traffic manager, N. Y. C. Lines W.	15,000.00
Engel, E. J., assistant to president, A. T. & Santa Fe	15,000.00	Ingersoll, A. M., assistant to vice-president, C. M. & St. P.	10,000.00
Ennes, Stanton, general manager, W. M.	10,000.00	Ingersoll, Charles E., president, M. V.	10,000.00
Enslow, Fitzpatrick & Baker, counsel, West Virginia, C. & O.	10,000.00	Isaacs, John Dove, consulting engineer, Southern Pacific	12,500.00
Eustis, P. S., passenger traffic manager, C. B. & Q.	12,000.00	Jarvis, George T., vice-president and general manager, Rutland	12,280.00
Evans, George E., fourth vice-president, L. & N., L. H. & St. L.	10,020.00	Jarvis, T. N., vice-president, Lehigh Valley	15,100.00
Evans, T. W., assistant general manager, New York Central	12,000.00	Jeffers, W. M., vice-president and general manager, Union Pacific	11,000.00
Ewing, Charles H., vice-president, Phila. & Reading	19,166.70	Jenks, C. O., assistant general manager, Gt. Nor.	12,000.00
Eyman, F. P., freight traffic manager, C. & N. W.	15,000.00	Jerome, F. J., general counsel, N. Y. C.	14,570.00
Farris, W. E., vice-president and general manager, N. O. Gt. N.	10,030.00	Johnson, A. C., general traffic manager, C. & N. W.	15,833.33
Fee, Charles S., passenger traffic manager, S. P.	10,580.00	Johnson, H., auditor, secretary, D. & I. R.	10,593.16
Ferguson, H. H., vice-president and general manager, Ill. Term.	12,000.00	Johnson, J. M., vice-president, Missouri Pacific	17,083.30
Fernald, Gustave S., general attorney, the Pullman Co.	19,000.00	Johnson, S. H., freight manager, C. R. I. & P.	10,333.33
Ferry, Clark B., vice-president and assistant secretary, C. M. & St. Paul	10,099.96	Johnson, S. C., general auditor, St. L. S. W.	12,030.00
Field, H. H., general solicitor, C. M. & St. P.	18,000.00	Jones, C. W., general manager, C. R. I. & P.	13,500.00
Finley, William H., chief engineer, C. & N. W.	15,000.00	Jones, Larz A., president and general manager, Ala. & V., V. S. & Pac., La. & M. Trans.	15,150.00
Fitzgerald, R., president and director, C. J. Ry. Co.	16,030.08	Katte, Edwin B., chief engineer of electric transportation, New York Central	10,000.00
Flynn, P. J., vice-president, D. L. & W.	19,883.26	Katzenbach, L. E., secretary and treasurer, director, Great Northern	10,000.00
Foley, Thos. J., vice-president, I. C. Y. & M. V.	15,833.33	Keeler, D. B., vice-president, F. W. & D. C. W. V. Ry.	10,000.00
Folles, Hogsett, Ginn & Morley, counsel Cleveland division, B. & O.	10,000.00	Kendrick, J. W., director maintenance of electrical construction, St. L. S. F.	12,000.00
Foque, T. A., general mechanical superintendent, M. St. P. & S. Ste. M.	12,000.00	Kenefick, Cooke, Mitchell & Bass, local counsel, Lehigh Valley	16,845.00
Foreacre, W. W., general manager, Southern	12,000.00	Kenly, John R., president, Atlantic Coast Line	18,600.00
Fornstrom, H., chief engineer, Va. Ry.	10,000.00	Kennedy, M. C., president, Cumberland Valley	15,000.00
Fort, Gerritt, passenger traffic manager, Union Pacific	12,500.00	Kerwin, Ed. E., vice-president, the Virginian, N. & P. B. L., N. Term., Deepwater	10,450.00
Fox, Fred C., A. T. & S. F. general manager	16,250.00	Kestler, Fred, general superintendent, Birmingham & Sou.	10,542.83
Freeman, Thomas J., general counsel, T. & P.	12,000.00	Kilgallen, M. H., general manager, C. H. Term. Tfr., C. H. Land Assn.	12,000.00
Fries, A., assistant general freight traffic manager, B. & O.	10,900.00	Kittle, C. M., senior vice-president, Illinois Central	14,335.68
Fripp, W. J., general manager, N. Y. C.	18,300.00	Kittredge, George W., chief engineer, New York Central	18,000.00
Gagel, Edward, chief engineer, N. Y., N. H. & H., C. N. E.	10,060.00	Knight, Ed. W., general counsel, the Virginian	12,000.00
Gallup, David L., comptroller, A. T. & S. F.	16,250.00	Koch, John J., freight traffic manager, Penn. L. W. of P., Pennsylvania, P. C. C. & St. L.	12,000.00
Gardner, Alfred A., special counsel, Long Island	14,000.00	Koons, George C., assistant superintendent New York Division, Pennsylvania	6,300.00
Gardner, C. W., comptroller, M. St. P. & Ste. S. M.	15,666.67	Koons, T. B., vice-president and freight traffic manager, C. R. R. of N. J.	15,010.00
Geer, I. W., general superintendent, P. C. C. & S. L.	10,200.00	Kramer, Le Roy, vice-president, Pullman Co.	24,000.00
Getzen-Danner, O. G., tax agent, N. Y. C.	15,200.00	Kreitter, J. W., superintendent, H. & D.	11,934.50
Gibbs, Alfred W., chief mechanical engineer, Pennsylvania	10,800.00	Krick, Charles S., general superintendent, Pennsylvania	11,250.00
Gill & Linn, division counsel, B. & O.	10,025.00	Kurrie, H. R., president, C. I. & L., Belt, C. & W. I., K. & I. Term.	17,851.18
Glennon, Edward T., assistant vice-president, N. Y. C.	17,500.00	Labau, Francis, traffic manager, N. Y. C.	13,250.00
Goodnow, C. A., vice-president, C. M. & St. P., P. S. & W. H., Gallatin Vy., Tacoma Eastern	17,500.00	Latrobe, Gamble, general superintendent Southern Division, P. B. & W.	10,350.00
Gordon, George B., special counsel, Pennsylvania	17,263.36	Lawton, Alex. R., vice-president, Central of Ga., Syl. Cen., L. & W., etc.	11,990.00
Gordon, J. A., general manager, C. G. W.	10,000.00	Leach, N. M., general traffic manager, T. & P.	12,000.00
Graves, Kizer & Graves, general counsel, Spokane & Ind Empire	10,000.00	Leary, Jas. T., comptroller, B. & O.	10,000.00
Gray, G. M., superintendent motive power, Bessemer & Lake Erie	10,440.80	Lee, Blewett, general solicitor, Ill. Central	15,140.00
Gray, Henry A., comptroller, Northern Pacific	12,000.00	Lee, G. H., general passenger agent, Lehigh Valley	10,000.00
Green, Lincoln, vice-president, Southern	15,042.00	Lee, Elisha, general manager and acting vice-president, Pennsylvania	18,510.70
Greer, Benj. B., vice-president and general manager, Colo. & Southern, C. B. & Q.	12,000.00	Lefber, A. W., vice-president and general manager, Mid. Valley	12,900.00
Greer, Lawrence, W. B. and general counsel, Western Maryland Ry.	12,000.00	Lewis, William H., superintendent of motive power, Norfolk & Western	10,800.00
Griffin, E. R., vice-president and general manager, Great Northern	13,400.00	Livengood, J. G., general auditor, Missouri Pac.	10,016.66
Gunn & Rasch, legal department counsel, Northern Pacific	14,900.00	Loree, L. F., chairman of board and executive committee, Wheeling & Lake E.	10,320.00
Gutelius, F. P., vice-president, Delaware & Hudson Co.	11,761.68	Loweth, C. F., chief engineer, C. M. & St. P.	15,000.00
Hackney, Leonard J., general counsel, C. C. & St. L.	15,120.00	Loyall, G. R., assistant vice-president, Southern Ry.	10,000.00
Haile, Columbus, vice-president and chief T. O., M. K. & T.	18,000.00	Luce, G. W., freight traffic manager, Southern Pac. Co.	12,465.00
Halsted, A. S., general counsel, L. A. & S. L.	10,000.00	Lukens, Edmund T., real estate and tax agent, Del., Lack. & Western	10,000.00
Hamilton, Frank Hastings, secretary and treasurer, St. L. & S. F.	15,000.00	Lyman, Alex. S., general attorney, New York Central	15,000.00
Hamilton, Geo. E., division counsel, Baltimore & Ohio	11,350.00	Lynde, Samuel A., vice-president and assistant secretary, C. & N. W.	13,333.33
Hamilton, Thos. B., vice-president, P. C. C. & St. L.	15,548.70	McCarty, T. E., vice-president at Detroit, Pennsylvania	16,000.00
Hamilton, Thompson A., comptroller, St. L. & S. F.	10,163.91	McCarty, R. J., auditor and vice-president, K. C. Southern	17,200.00
Harriman, W. A., vice-president, Union Pacific	10,930.91	McCrea, James A., general manager, Long Island, N. Y. & L. I. Trac., L. I. Elec.	13,731.99
Harris, George B., chairman board of directors, C. B. & Q.	15,000.00	McFeaters, F. R., general superintendent, Union	13,068.16
Harwood, George A., engineer assistant to vice-president, N. Y. Central	12,400.00	McGonagle, William A., president and general manager, U. S. Steel Corporation	18,546.00
Havemeyer, Henry O., president-general manager, N. Y. Central	10,000.00	McKnight, T. H., treasurer, Pennsylvania lines	15,000.00
Hawks, G. F., vice-president and general manager, El Paso & S. W.	15,450.00	McLaughlin, A. A., attorney, C. & N. W., C. St. P. M. & O., Canadian Pac.	10,083.33
Hawley, A. L., general auditor and secretary, El Paso & S. W., Nacozari, Morenci Sou., E. P. & S. W. of Tex., E. P. & N. E., Clouderoft, E. P. & S. W. Val. Com., E. P. & S. W., Bd. Ser.	12,500.00	McMaster, H. W., vice-president and general manager, Wheeling & L. E.	15,500.00
Heebner, Charles, general solicitor, Phila. & Reading	12,500.04	Macdowell, William G., vice-president, N. & W. V. C., N. R. H. & W., W. S. U. Sta. Co., Cen. F. M. & I. Ins.	18,054.97
Herriman, Frank E., special assistant to president, New York Central	12,000.00	Mackie, James Stuart, treasurer, C. & O., C. & O. of Ind.	10,020.00
Hiland, J. H., vice-president, C. M. & St. P.	15,000.00	Manchester, Henry C., superintendent of motive power, D. L. & W.	11,833.32
Hill, J. H., vice-president and general manager, Gal. H. & Henderson	10,000.00	Manss, W. H., assistant to vice-president, B. & O.	16,000.00
Hilton, Alexander, passenger traffic manager, St. L. San Fran.	10,000.00	Mapother, W. L., first vice-president and director, L. & N., L. H. & St. L.	15,659.09
Hobbs, George S., second vice-president, Maine Central, S. Riv. & Rang. Lakes, Bridg. & Saco River, Bridg. Teleg. Co.	12,100.00		
Hobbs, William J., comptroller and vice-president, Boston & Maine, York Harbor & Beach, St. Johns. & Lake Champ., Mont. & W. River, Barre & Chelsea, Troy Union	16,060.00		

Martin, Geo. R., vice-president and comptroller, G. N., Crows N. P. Coal Co.	15,500.00	Reath, T. W., general solicitor, N. & W.	12,900.00
Mason, J. S., general superintendent, B. & L. E.	10,440.80	Reed, Smith, Shaw & Beal, general attorneys, P. & L. E.	15,000.00
Maxwell & Ramsey, solicitors, P. C. C. & St. L., Lebanon & N. Louisville Bridge Co.	19,700.00	Reid, George T., assistant to president, W. Con. Nor. Pac.	15,000.00
Maxwell, W. C., vice-president, Wabash.	16,500.00	Reilly, F. C., freight traffic manager, St. L. S. F.	10,000.00
May, Augustus S., treasurer, N. Y., N. H. & H., Cen. N. E., N. E. S. S., N. & N. E. Tr., Housatonic P., Westchester S., Berkshire S., N. Y. & S.	10,000.00	Remington, Carl, secretary, C. & Ohio, Hocking Val., C. & O. N.	11,500.00
Meeder, Frederick H., assistant to vice-president, N. Y. C., Mich. Cen., Pittsburgh & L. E., T. & O. Cen., Raquette Lake.	10,040.00	Rice, N. M., vice-president, St. L. S. F.	17,919.33
Merriam, Frank L., general counsel, P. Marquette.	18,000.00	Rich, Eason, A. G. S., Union Pacific.	10,000.00
Miller, Edward T., general attorney, St. L. S. F.	10,000.00	Richards, R. C., C. C. S. C. and G. C. A., C. & N. W.	10,000.00
Miller, Henry Watkins, vice-president, Southern.	15,464.60	Rickard, R. D., secretary and treasurer and director, N. Y. O. & W.	10,399.99
Miller, S. F., general freight agent, C. & N. W.	10,000.00	Riggs, Ed. G., executive assistant, N. Y., N. H. & H.	15,000.00
Moody, Samuel, passenger traffic manager, Pennsylvania.	11,000.00	Robins, Jesse W., receiver, Trinity & Brazos Valley, Houston Belt & Ter. Ry.	10,500.00
Moore, S. W., general counsel, K. C. Term.	11,083.31	Robinson, E. F., general manager, B. R. & P.	10,333.33
Moore, S. W., general solicitor, K. C. So.	11,166.65	Robinson, L. A., comptroller, C. & N. W. Ry.	15,040.00
Moot, Sprague, Brownell & Marcy, local attorneys, Erie, Buff. C.	13,800.00	Robson, Frank E., general counsel, Michigan Central.	12,010.00
Morrison, J. I., general auditor, Lehigh Valley.	10,085.00	Rockwell, Samuel, consulting engineer, New York Central.	10,000.00
Morrison, J. T., superintendent of traffic, Pullman Co., Pullman R. R.	6,000.00	Rodgers, J. G., assistant to president, Pennsylvania, West. N. Y. & Pa. Ry., Phila., Balto. & Wash., West Jersey & Seashore.	11,780.60
Morse, Charles A., chief engineer, C. R. I. & P.	18,000.00	Rodman, William B., general solicitor, Norfolk Southern, John L. Rober Lumber Co.	15,000.00
Munroe, John A., vice-president in charge of traffic, U. P., Oreg. Short Line.	15,000.00	Rogers, S. M., vice-president, Elgin, Joliet & Eastern.	12,060.00
Murphy, J. F., general manager, M. F.	15,000.00	Root, F. W., solicitor, C. M. & St. P. Ry. Co.	12,000.00
Nay, Frank, comptroller, C. R. I. & Pac., P. & B. Val., K. & D. M.	15,100.00	Rossiter, Edw. L., treasurer, New York Central.	18,180.00
Neale, S. C., attorney and chief counsel, Pennsylvania.	12,000.00	Ruffin, J. R., freight traffic manager, Norfolk & Western.	11,000.00
Needles, A. C., general manager, N. & West.	16,145.00	Runnells, Clive, vice-president, Pullman Co.	18,000.00
Neilson, Lewis, secretary, Pennsylvania.	14,000.00	Scarritt, Scarritt, Jones & Miller, general attorneys, Chgo. & Alton.	10,000.00
Newbern, Robert H., superintendent, Pennsylvania.	12,000.00	Schlafer, William, general mechanical superintendent, Erie, N. Y. S. & W.	10,000.00
Newell, A. B., president, general manager, and purchasing agent, Toledo Ter.	7,200.00	Scholz, Carl, consulting mining engineer, C. B. & Q.	11,666.62
Newton, A. W., chief engineer, C. B. & Q.	12,000.00	Schoyer, Alfred M., vice-president, Pennsylvania, Pgh. C. C. St. L., Belt Ry. of Chgo., Calumet West.	18,340.85
Nichols, Edward T., vice-president, Great No.	12,500.00	Scott, R. B., general solicitor, C. B. & Q.	14,833.36
Nichols, H. S. P., assistant general counsel, Pennsylvania.	10,000.00	Scott, S. C., assistant to vice-president, Pennsylvania, Tyler-Conn. Shpsvle.	10,210.00
Northrop, C. B., assistant general counsel, Southern, Mobile & O., Ga. So. & Fla.	10,000.00	Seddon, William L., vice-president, Seaboard Air Line, Nea. Dub. & Sav.	13,191.64
Norton, Thomas J., general attorney, A. T. & S. F.	12,500.00	Seneff, E. H., general solicitor, Pennsylvania, Pgh. Cin. C. & St. L.	15,000.00
Noyes, Walter C., general counsel, Del. & Hud., Windsor C. Co.	15,030.00	Shand, Alex. C., chief engineer, Pennsylvania.	12,200.00
Nutt, H. C., general manager, L. A. & S. L.	18,000.00	Shaw, R. Martin, general counsel, Chgo. Grt. Northern.	18,000.00
O'Brien, J. E., vice-president and general manager, Union Pac., No. Pac. Ter.	16,020.00	Sheldon, F. B., vice-president, Toledo & Ohio Cent.	13,880.00
O'Donnell, R. L., assistant general manager, Pennsylvania.	13,096.75	Sheaffer, Charles M., general superintendent transportation, Pennsylvania.	12,000.00
Ogden, George D., freight traffic manager, Pennsylvania.	12,000.00	Shearer, Henry, general superintendent, Mich. Central.	10,000.00
Olyphant, Robert M., chairman executive committee, Del. & Hudson.	15,000.00	Sheehan, James B., general solicitor, C. St. P. M. & O.	15,000.00
Olyphant, F. M., secretary, Del. & Hudson.	10,117.45	Shelton, E. M., assistant to general counsel, C. B. & Q.	13,166.66
Orcutt, George N., vice-president, Erie.	15,560.00	Shepard, F. J., vice-president and director, Mo. Pacific, T. & P.	17,330.00
Orr, J. W., comptroller, Pennsylvania Lines, W. Pgh.	12,000.00	Sheppard, F. L., assistant to vice-president, Pennsylvania.	10,200.00
Osborn, William C., general counsel, El F. & S. W.	15,000.00	Smart, Edw. M., assistant general counsel, Chgo. & N. W.	15,000.00
Owen, Thomas, superintendent, Duluth & I. R.	10,481.20	Smith, Addison R., third vice-president, L. & Nashville.	12,510.00
Owen, W. F., president, Gulf, M. & No.	15,220.00	Smith, Edward C., president, Central Vermont.	12,000.00
Palmer, Warren S., president, general manager, N. West. Pac.	10,030.00	Smith, F. Sullivan, receiver, vice-president, Pgh., Shmt. & N. W.	12,000.00
Park, W. L., first vice-president, Chic. Grt. Western.	16,590.00	Smith, H. F., vice-president, traffic manager, N. C. & St. L.	10,000.00
Parker, R. J., general manager, A. T. & S. F.	13,000.00	Smith, L. D., vice-president, Lehigh Valley.	14,583.33
Parsons, Robt. S., assistant to president, Erie.	16,414.99	Smith, Milton H., president, L. & Nash.	20,639.09
Patterson, Crawford & Miller, solicitors, Pennsylvania.	15,000.00	Smith, R. K., vice-president and general manager, Miss. Cen.	10,000.00
Patton, W. A., assistant to president, Pennsylvania, Phila. Bal. & Wash., W. J. & S., Phila. & Cam. Ferry, N. Y., Phila. & Nfk.	12,600.00	Smith, William W., division counsel, B. & O.	15,010.00
Paulding, Charles C., solicitor, N. Y. Central.	12,750.00	Spangler, D. E., general superintendent, N. & W.	10,500.00
Payne, John Barton, general counsel, Chicago Great Western.	18,000.00	Spencer, H. B., vice-president, Southern, Lenoir Car Works, G. S. & F.	19,035.16
Payson, Albert H., assistant to president, A. T. & S. F.	10,030.00	Spens, C. E., vice-president, C. B. & Q.	13,999.98
Peabody, C. A., director and chairman, Illinois Central, Y. & M. V., Chgo., St. L. & N. O., Cant. Aber. & Nash, Dub. & Sioux City, Miss. Valley Co., Miss. Valley Corp.	13,495.00	Spock, Benjamin I., general solicitor, N. Y., N. H. & H., N. E. Steamship Co., C. N. E.	10,166.66
Pearce, Hiram M., general traffic manager, Chgo. St. P. & O.	13,000.00	Spoor, J. A., chairman of board, Chicago Junction.	15,000.00
Peck, George R., general counsel, C. M. & St. P.	10,000.00	Stark, B. M. O., general manager, L. & N.	10,000.00
Perkins, E. B., general attorney, St. L. S. W.	10,060.00	Stephens, J. R., assistant to receiver, Missouri Pac.	12,000.00
Perkins, Edw. R., jr., president, Cleve. & Mah. Val.	13,000.00	Stevens, F. W., general counsel, N. Y. Central, C. C. C. & St. L., Cin. Northern, Mich. Central, Indiana Harbor, Boston & Albany, Pitts. & L. E., Toledo & O. Cen., Zanesville & W. Lake Erie & W., Rutland.	15,000.00
Perry, M. J., chairman board, Norfolk South.	16,080.00	Stevens, H. E., chief engineer, Nor. Pacific.	10,000.00
Peter, J. S., director and first vice-president, San A. & Aransas Pass.	10,300.00	Stevens, J. P., general manager, C. & O., F. & J. Bdge. Co., C. & C. E. R. & T. & B. Co. Nfk. & Pots. B. Line.	11,100.00
Pettibone, Frank G., vice-president and general manager, A. T. & S. F., Gulf Col. & S. F.	16,250.00	Stickney, S. C., assistant to vice-president, Erie.	15,000.00
Feyton, John Howe, president and general manager, Nash., Chat. & St. L.	12,000.00	Sinon, Charles H., freight traffic manager, Wabash.	10,000.00
Phelan, C. A., general manager, Mo. & No. Ark.	10,000.00	Stockton, Ed. A., deputy comptroller, Pennsylvania.	10,666.55
Phelps, W. G., purchasing agent, Pennsylvania.	10,000.00	Stokes, Walter, general counsel, Tenn. Cent.	10,000.00
Phillips, C. J., general superintendent, D. L. & W., Harlem Trsf. Co.	13,833.30	Stone, C. L., passenger traffic manager, Mo. Pac.	10,000.00
Pickens, Moores, Davidson & Pickens, solicitors, P. C. C. & St. L., Ind. & Frankfort.	17,456.00	Stone, H. L., general counsel, L. & N.	12,000.00
Pierce, A. S., treasurer and assistant secretary, Chgo. & N. W., Chgo. St. F., M. & O.	10,555.55	Stotesbury, E. T., chairman of board, Phila. & Read.	10,180.00
Pierce, T. M., general counsel, Term. R. R. Asso. of St. L., St. L. M. B. Term., Wig. Ferry Co., St. L. Trans., E. St. L. Con. Ry.	12,300.00	Strawn, S. H., general solicitor, C. & A.	17,500.00
Pierpont, H. E., freight traffic manager, C. M. & St. P.	12,000.00	Strickland, S. G., general manager, C. & N. W.	15,164.98
Plaisted, F. H., assistant director of traffic, Sou. Pacific.	11,500.00	Sturgis, C. I., general auditor, C. B. & Q.	15,000.00
Plant, A. H., comptroller, Southern, Cin. N. O. & T. P. Ala. G. S., N. O. & N. E., North Ala., Ga. Sou. & Fla., Lenoir Car Wks., Gadsden Car Wks., Ry. Fuel Co.	18,053.16	Sturr, A. B., assistant to fourth vice-president, Pennsylvania.	10,200.00
Pollock, Benjamin R., general manager, Boston & Maine.	15,000.00	Sullivan, L. F., comptroller, C. & Ohio, Hocking Valley.	11,000.00
Pollock, Walter B., manager marine department, N. Y. Central, W. S., Mer. Desp. Trans., West. Transit Co.	18,000.00	Sweeney, J. C., general solicitor N. Y. N. H. & H.	10,166.66
Pollok, Allan, superintendent, Southern Pacific.	12,000.00	Sweet, A. E., vice-president, D. & R. G.	16,850.00
Porcher, Samuel, purchasing agent, Pennsylvania, Phila., Bal. & Wash., West J. & Seashore, N. Y., Phila. & Nor., Bal., Ches. & Atlan., Md., Dela. & Va., Balto., Ches. & At.	14,000.00	Sloan, H. M., assistant to president C. R. I. & P., P. & B. V., K. & D. M., Belt of Chicago.	12,200.00
Porter, H. T., chief engineer, Bessemer & L. Erie.	10,440.00	Tait, Edwin E., president, director, and general counsel, Pittsburgh & Shawmut, Allegheny River Min. Co.	15,000.00
Powell, Thomas Carr, vice-president, Southern, C. N. O. & T. F., A. G. S., Nor. Alabama, H. & N. E., N. O. & N. E.	18,600.00	Taussig, J. E., vice-president, Wabash, Chi. & West. Ind. Belt, Kansas City Ter. & Amer. Refrigerator Transit Co.	17,900.00
Pyeatt, J. S., president and general manager, N. O., Tex. & Mex. St. L. B. & Mex., Beau. S. L. & West. Orange & N. W.	15,000.00	Taylor, Jr., Henry, general solicitor, C. & O.	10,800.00
Quayle, Robert, G. S. M. P., C. & N. W., P. R. C. & N. W., W. & N. W.	15,000.00	Taylor, Herbert A., general attorney, Erie.	10,010.00
Ranh, S. E., president, B. R. R. & S. Y.	14,750.00	Taylor, Louis S., comptroller, The Pullman Co.	18,000.00
Rapelje, John W., general manager, Nor. Pac.	12,000.00	Taylor, R. V., vice-president and general manager, Mobile & Ohio, So. in Miss.	17,095.30
Ray, G. J., chief engineer, D. L. & W.	13,000.00	Terhug, Nicholas, assistant secretary and assistant treasurer, Great Northern, Paducah & Ill. R. R. Co.	10,000.00
Rearick, A. C., general attorney, C. & O., H. V. Ry.	10,000.00	Terry, Cavin & Mills, solicitors, Gulf, Colo., & Santa Fe, S. W. Lbr. Co. of N. J.	15,000.00

Torrey, Frank A., general superintendent of motive power, Chicago, Burlington & Quincy.....	12,750.00
Towne, W. J., assistant general manager, C. & N. W.....	10,125.00
Trenholm, Arthur W., vice-president and general manager, C. St. P. M. & O.	17,000.00
Trump, Michael, special assistant to general manager, Pennsylvania	10,200.00
Untermeyer, S., general controller, K. C. S.	10,000.00
Upthegrove, D., general solicitor, St. L. S. W.....	12,100.00
Utter, H. L., secretary and treasurer, Mo. Pac.....	12,000.00
Van Cott, Riter & Farnsworth, attorneys, Denver & Rio Grande	14,193.96
Van Deventer, A. K., treasurer, Southern Pac.....	14,250.00
Veazey & Veazey, attorneys, Great Northern.....	10,000.00
Vredenburg, Wall & Carey, local counsel, Pennsylvania.....	10,000.00
Waggner, B. P., general solicitor, Missouri Pacific.....	12,000.00
Waid, G. S., vice-president and general manager T. & N. O., H. E. & W. T., H. & T. C., D. Nav. Co., H. & S. Co., So. Pac. Ter., G. H. & S. A.	10,030.00
Waldo, Frank O., auditor, Mich. Cen., T. H. & B., T. H. & B. Nav.	10,570.95
Walker, Bertrand, general counsel, N. Y. Central, I. H. Belt Co., C. C. & St. L.	12,000.00
Walker, Charles A., treasurer, Del. & H.	12,000.00
Walker, W. W., vice-president and general manager, D. S. S. & A., M. R. R. R., Mac. Trans.	15,000.00
Wall, Garrett B., assistant to president, C. & O. Ry., C. & O. of Ind., C. & O. N., H. Val.	10,840.00
Wallis, James T., general superintendent motive power, Pennsylvania	12,000.00
Walter, Claude, general counsel, N. C. & St. L.	11,700.00
Walters, Frank, general manager, C. & N.	10,124.99
Walters, Henry, chairman board of directors, L. & N.	15,778.37
Wann, Fred A., general traffic manager, L. A. & S. L.	10,000.00
Watts, Legh R., consulting counsel, S. A. Line.....	10,000.00
Webb, William A., vice-president and C. O. O., M. K. & T. Lines	18,000.00
Webster, James, freight traffic manager, N. Y. C. Lines, N. Y. C. West. Mich. C., P. & L. E., T. & O. Cen.	10,833.33
Wells, May & Sanders, attorneys, Ill. C. Y. & M. V.	15,449.88
Wells, A. G., general manager, A. T. & S. F.	18,750.00
West, J. L., freight traffic manager M. K. & T.	10,000.00
West, Samuel H., general attorney, N. Y. C.	12,020.00
Whaley, A. R., pensioner, N. Y. N. H. & H., Cen. N. E. Ry.	13,936.66
Wheeler, Herbert, general manager, P. & A. R. & N., B. C. Y., B. V. Nav. Co., A. Y. Nav. Co.	10,000.00
Wheeler, Wm. G., general solicitor, C. & M. W.	15,000.00
Whitaker, Frank M., vice-president, C. & O., C. & O. of Ind., C. & O. N., H. Val. Ry., L. & J. B. Co., C. & O. N.	13,280.00
White, Edw. J., vice-president and general superintendent, Mo. Pac.	16,790.00
White, R. A., general auditor, N. Y. Cen., M. C. R. R., C. C. C. & St. L., Rutland, P. & L. E., L. E. & W., T. & O. C., I. H. B.	15,000.00
White, Wm. H., president and director, R. F. & P.	12,200.00
Whitehead, Chas. N., vice-president and assistant to receiver, M. K. & T.	19,500.00
Whiten, E. T., assistant general manager, Pa. Lines.	10,650.00
Whiting, F. V., general counsel and attorney, N. Y. C. Lines, M. C., C. C. C. & St. La., T. & O. Cen.	11,500.00
Wickersham, Charles A., president and general manager, W. Ry. of Ala., A. & W. P., At. Ter., Ga. R. R.	12,230.00
Wickham, H. T., vice-president and general comptroller, C. & O.	15,000.00
Wight, Charles S., general freight representative, B. & O.	15,000.00
Wight, Pearl, company receiver, T. & Pac.	18,000.00
Wight, Sidney B., general purchasing agent, N. Y. C.	15,000.00
Wilbur, Rollin H., vice-president and general manager, L. & N. England	11,570.00
Wilcox, Nelson J., attorney, C. M. & St. P.	10,000.00
Williams, William H., chairman board of directors, Wabash.	16,240.00
Wilson, Dabney & King, general attorney, Int. & G. No.	16,600.00
Wilson & Rector, solicitors, Hocking Val.	11,499.99
Wilson, Wm. H., assistant first vice-president, No. Pac.	10,000.00
Wood, Benjamin T., assistant to president, St. L. San Fran.	10,000.00
Wood, Fred H., general attorney, So. Pac.	15,750.00
Wood, William B., general manager, G. R. & Ind.	10,000.00
Worthington, B. A., president, Cin. Ind. & W.	15,000.00
Worthington, W. A., vice-president and assistant to chairman, So. Pac., La. West.	13,520.00
Wright, C. C., general solicitor, C. & N. W. Ry.	15,000.00
Wright, R. C., traffic manager, Pennsylvania.	16,000.00
Yeomans, George G., general purchasing agent, N. Y. N. H. & H., Cen. N. Eng., N. Eng. S. S. Co.	12,000.00
Yohe, James B., general manager, P. & L. Erie.....	15,000.00

SUPPLEMENTARY LIST

Carthell, A. B., chief engineer, Boston & Maine.....	10,000.00
Clark, Henry W., counsel, Union Pacific.....	15,679.00
Cotton, W. W., counsel, O. W. R. R. & N. Co.	17,400.00
Gage, Foley & Gilbert, attorneys, Southern Pacific.....	11,100.00
Grace, J. W., superintendent, P. B. & N. E.	10,123.63
Guir, W. T., general traffic manager, Lehigh Valley.....	12,005.00
Hart, P. C., general manager, C. M. & St. P.	12,000.00
Hess, J. L., president, F. J. & G.	10,000.00
Jones & Miller, attorneys, Chicago & Alton.....	10,000.00
Long, S. C., general manager, Pennsylvania.....	16,000.00
Lupfer, Alexander M., chief engineer, S. P. & S.	12,400.00
Morse, W. E., vice-president and general manager, D. & St. L.	12,000.00
Ringling, John, president O. N. M. & P.	10,000.00
Scandrett, H. A., assistant director of traffic, U. P.	15,000.00
Sloan, H. M., assistant to president, C. R. I. & P., P. & B. V. K. & D. M. Belt Ry.	12,200.00
Smith, Rufus B., receiver, C. H. & D.	10,000.00
Starr, A. B., special assistant and vice-president, Pa. West.	10,200.00
Stetson, F. L., general counsel, Sou.	15,000.00
Toller, Hogsett, Ginn & Morely, counsel, B. & O.	10,000.00
Wildin, G. W., general manager, N. Y. N. H. & H.	11,249.99
Zimmerman, F., vice-president, C. I. & L., K. & I. Term.	10,033.96

"THIS SAFETY STUFF is all a joke," a car man said one day; he didn't put his blue flag up—now he has passed away.—Fred Meyers.

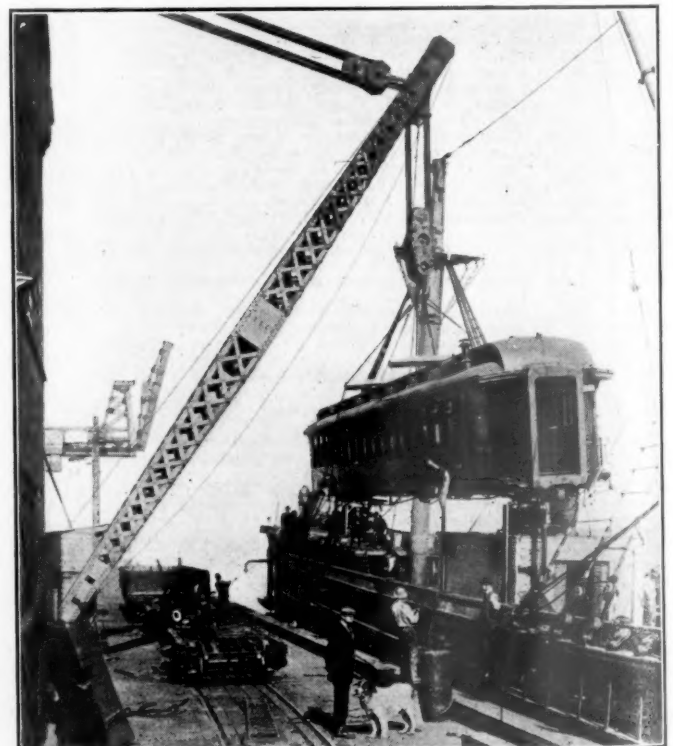
Report on Butting Collision at Trussville, Alabama

THE INTERSTATE COMMERCE COMMISSION has issued a report dated April 22, and signed by W. P. Borland, Chief of the Bureau of Safety, on the butting collision of freight trains near Trussville, Alabama, on the Alabama Great Southern, on Feb. 15, 1920, in which five employees were killed, including the enginemen of both trains. The trains had an order to meet at Trussville and the engineman of the northbound train ran past the meeting point; and he also passed an automatic block signal set against him. The conductor of this train is held at fault for failing to take prompt measures to stop his train when he saw the southbound was not on the side track, and his flagman is censured for not informing the conductor on this point as soon as he saw the situation.

The engineman at fault had been a runner for ten years, with a good record; but he evidently had had no sleep for about twenty-six hours. The collision occurred about 9:40 P. M. The engineman had been on duty all night the night before and had not been to his home during the day. It is the conclusion of the inspector that he was asleep at the time of the collision.

The train dispatcher is censured for issuing a meeting order on form 19; if he had used form 31, requiring the train to be stopped for the signature of the conductor, the engineman and the other men on the engine might have been more thoroughly impressed with the fact that a meeting point had been established. The dispatcher said that disregard of the rule requiring the use of form 31 to restrict the rights of a train was common. This, says the report, indicates lax supervision, which requires prompt corrective measures at the hands of the operating officers of the road.

Mr. Borland again recommends the use of automatic train stops.



Photograph from Wide World Photos

Car Being Loaded on Freighter at Seattle for Use on the New Alaskan Railway

A Unit Construction Method for Engine Houses

The Pennsylvania Develops Three Standard Designs With Resultant Economies in Supervision

EARLY IN 1918 it became necessary for the Pennsylvania Railroad to enter into an extensive program for the reconstruction of its engine terminals at many points along its lines. Accordingly, designs were developed by the engineering department of the road for three types of house, i. e., Type 68, Type 60 and Type 48, in which the type is indicative of the number of stalls in a complete circle.

Generally speaking, the houses are similar. All were designed with six circular bays of 20 ft. each, giving a total length of stalls of 120 ft., the design in each case being predicated on the use of pre-cast reinforced concrete columns, girders, purlins, and other members required in the construction of the frames of enginehouses. Each type of house was planned for use in connection with 110-ft. turntables and in each type the distance between columns in the inner walls is 13 ft. The angle between adjacent tracks in Type 48 is 7 deg. 30 min.; in Type 60, 6 deg., and in

pre-cast frame members were to be secured from the company's concrete molding plant at Morrisville, N. J. This plan was not carried out in full. Instead, 8 stalls only were constructed of pre-cast members, while 14 stalls were poured in place and 12 stalls remain uncompleted. The drawings show the standard girders, column and roof beams for a standard 68-stall house together with an erection diagram. The method followed in placing the pre-cast members in the eight stalls will appear in the sequence of this article.

The Pitcairn House

The stress of business at Pitcairn precluded any curtailment in the capacity for handling locomotives and the construction plan was worked out accordingly. Three temporary pits with capacities for three locomotives each were fitted up under cover of an old storehouse before tearing away any portion of the old enginehouse. The wrecking of the old



First Stage—The Columns in Place

Type 68, 5 deg. 17 min. 38 sec. The distance from the center of the table to the inner circle wall in Type 48 is 99 ft. 4 $\frac{5}{8}$ in.; in Type 60, 124 ft. 2 $\frac{3}{8}$ in., and in Type 68, 140 ft. 9 in. The variations in the central angles are, of course, reflected in corresponding variations in the roof girders of the various types and in the outer circle wall, the distance between the outer columns in Type 68 being 24 ft. 1 in., increasing to 25 ft. 6 $\frac{3}{4}$ in. in Type 60 and to 28 ft. 8 $\frac{3}{8}$ in. in Type 48.

As a part of the reconstruction plan, enginehouses of the new type were erected at West Philadelphia, Pa., Marcus Hook and Pitcairn, and Gardenville, N. Y. Of these possibly the one at Pitcairn is the most interesting because of the local conditions under which the construction was carried out. At this point the plans provided for the replacement, on the same site, of an old 44-stall house of frame-and-brick construction with concrete engine pits and a 100-ft. turntable, with a Type 68 enginehouse of which 34 stalls, all of unit construction, were to be erected for which the

house was then done in sections and the erection of the new house proceeded in the same manner. By shifting the approach tracks to clear the new work and installing a temporary 100-ft. table in the pit prepared for the reception of the new 110-ft. turntable and providing a section of track connecting the old and the temporary tables, it was possible to go ahead with the wrecking of the old house and the new construction, placing the new sections in service as completed and at the same time maintaining continued use of the unwrecked portions of the old building.

The site of the improvement is in the old bed of Turtle Creek on made ground consisting of eight feet of cinder fill. The new foundations were carried down to the gravel and clay underlying the cinders, the old fill being loaded into standard-gage dump cars by a clam-shell. The removal of the old reinforced-concrete engine pits complicated the making of the excavation for the new house, it being necessary to resort to blasting, using small charges of dynamite shot under a mattress. The holes in the concrete were prepared

by air drills and after the shooting acetylene torches were used to cut the reinforcing bars. A derrick, a steam shovel and a locomotive crane were used for loading the broken concrete into cars.

The construction of the new house was begun in the 8-stall section built in accordance with the unit-construction plan. To permit of this work nine stalls of the old house were wrecked and the concrete in the foundations and engine pits for the new structure was placed by means of a distributing tower. As the pits were completed the track rails were applied, thus providing the means for running in the locomotive cranes by which the pre-cast members were placed. In the 14-stall section, in which the members were cast in place, the tower mentioned above was also utilized for spouting the concrete to place.

Details of Design Modified After

First Houses Were Constructed

The pre-cast portions of the Pitcairn house and the others mentioned were built in accordance with the original designs. During the erection of these houses certain modifications in the details of design presented themselves as desirable and have since been made.

In the original designs the column lengths were varied slightly with the type and the cross-sections of similar girders varied slightly with their length. Later the plans were re-

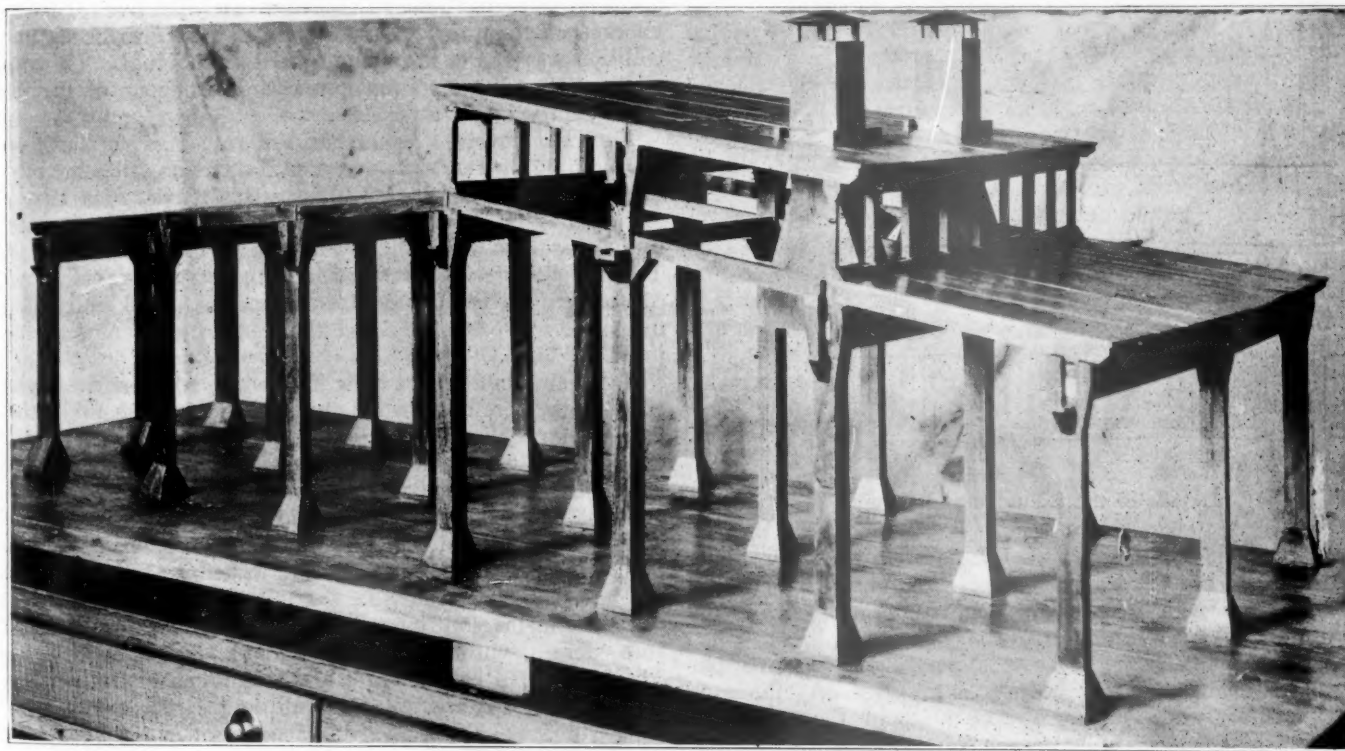
vised so that the same column will fit in either type of house and similar girders are of the same cross-section for all the houses. By these changes important economies in forms were effected.

Again, in the first houses, the roof slabs were cast as a unit with the roof beams. These proved to be unsatisfactory from a transportation viewpoint and for handling in the yard and at the site of the house because of their extreme size and weight. These have therefore been superseded by pre-cast roof beams supporting a poured-in-place slab of reinforced concrete or gypsum. Also the practice of pre-casting the window frames proved to be expensive and it is proposed to vary the design by doing away with the frames by carrying the columns up to the monitor roof as shown in the drawing.

One of the photographs shows a model of two stalls built to scale and in accordance with the original design, including the columns, girders, struts, roof slabs cast as a unit with the roof beams, window frames and the timber smoke jacks. As will be noted the changes mentioned above deal with details and in no way affect the general design.

In all types the peak of the roof is at the center of the house with the monitors placed over Columns 4, 5 and 6 and sloping toward the rear of the house. In the houses built with the pre-cast roof slabs constant smoke removal was obtained through the monitors by 3-in. by 8-in. vents which are permanently open, and by 2-in. by 3-in. slots through the ends of all slabs where pockets could be formed. As revised, the roofs present no pockets for the accumulation of smoke and gases. Regulated ventilation is secured through hinged sashes provided in the rear walls and in the monitors.

Fig. 2 shows the columns of the model ready for the reception of the girders which are shown in place in Fig. 3.



Third Stage—The Stall Complete

for by the fit of the girders in the column recesses. In all cases the joint is made a fit by filling in with mortar after the girders have been placed.

In erecting the frame the columns are set in place over the upset provided in the footings, locomotive cranes being generally used for the purpose. The erection of columns is simplified by the fact that the column bases are so proportioned that after once being set in place the columns are stable, and no guying is required. Once placed, the bases may be concreted in or not as desired. With the columns in place the erection of the other members follow in sequence. Where a turntable is available the locomotive cranes used in placing the pre-cast members are run in over the pit tracks,

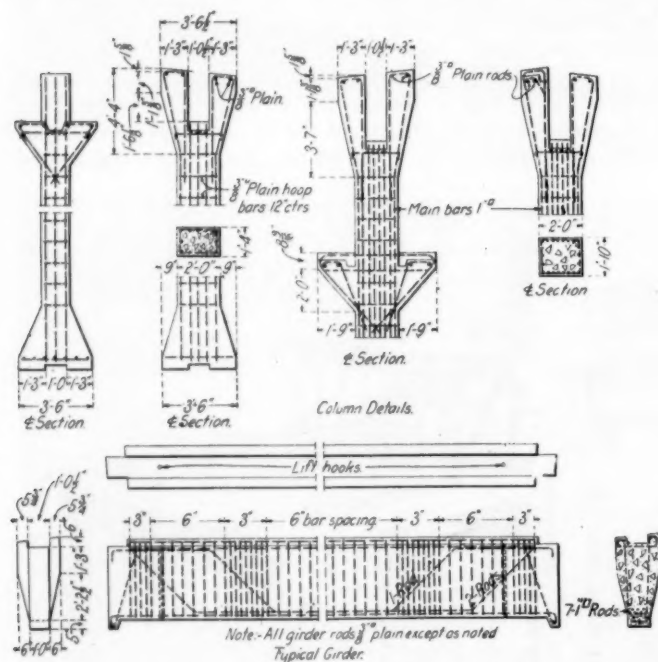
Where a turntable is available the locomotive cranes used in placing the pre-cast members are run in over the pit tracks,

Where a turntable is available the locomotive cranes used in placing the pre-cast members are run in over the pit tracks,

which are installed as the pits are completed in advance of erection. In the absence of a turntable, circumferential tracks may be used for the cranes during the erection of the frame.

Mass concrete is used in the foundations and engine pits of these houses. The engine pits are 104 ft. long and 4 ft. wide. The pit side walls are 2 ft. 7 in. thick and are capped by 8 in. by 8 in. by 16 in. white oak timber rail seats which overhang the pit 3 in., giving protection to the heating pipes in the pits. The ties are spaced 18 in. on centers and the 130-lb. rails are spiked to them without the use of tie plates. The bottoms of the pits are 9 in. thick, crowned in the center with the high and low ends 2 ft. 11 in. and 3 ft. 6 in., respectively, below the level of the floor, providing a 7-in. drop in the length of the pit for drainage toward the inner circle wall where a drainage pit is provided, extending all around the house.

The floors consist of creosoted wood blocks for the wearing surface on a 1-in. sand cushion and a 4-in. concrete



Details of the Columns and Girders

sub-floor on 8 in. of cinders. The doors in the inner circle walls are of the wooden roller type. The outer circle walls are of brick with steel sash. Slag roofing on concrete or gypsum slabs constitute the roofs.

While it is desirable to build these houses with pre-cast members the frames may be poured in place. At Pitcairn both methods were followed and at this point the forms for the poured-in-place stalls were built on the job. For the Gardenville house the forms were shipped in from the Altoona (Pa.) shops.

The plans for the standard houses were developed under the direction of A. C. Shand, chief engineer of the Pennsylvania, and H. R. Leonard, engineer of bridges and buildings, by Robert Farnham, assistant engineer of bridges and buildings, Philadelphia, Pa., to whom we are indebted for the information contained herein.

THE RAILROADS OF THE SOUTH, and of every other section, are entitled to rates which, with competent, economical management, will enable them to pay fair wages and make fair returns. That is simple justice and sound policy, and in administering justice the Interstate Commerce Commission should also remember to act promptly.—*St. Louis Post-Dispatch*.

Train Accidents in February*

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of February, 1920:

COLLISIONS						
Date	Road	Place	Kind of accident	Kind of train	Killed	Injured
5	Penn.	Frankford	xc	P. & F.	0	14
8	Texas & Pacific	Ranger	xc	P.	1	16
15	Alabama G. S.	Trussville	bc	P. & F.	5	2
16	Mo., Kan. & Tex.	Muskogee	re	P. & F.	1	0
18	{ V. S. & P. }	{ La. & W. W. }	xc	P. & F.	2	18
21	Southern	Charleston, S. C.	bc	P. & P.	0	5
DERAILMENTS						
Date	Road	Place	Cause of derailment	Kind of train	Killed	Injured
4	Missouri Pacific	Clayton	Open draw	P.	7	10
7	Seaboard A. L.	Ways	Unx.	P.	0	48
13	Ga. Southern & F.	Lake Butler	Acc. obst.	P.	0	3
13	Louisville & N.	Pleasant View	Acc. obst.	P.	1	2
18	Danville & W.	Buford, Va.	Loose wheel	P.	1	4
18	Penn.	Clarksville	b. tire	P.	0	2
OTHER ACCIDENTS						
Date	Road	Place	Cause of accident	Kind of train	Killed	Injured
*10	Mo., Kan. & Tex.	Machens, Mo.	Fire	P.	0	0
*28	New York Central	Kingsville	Fire	P.	0	2

The trains in collision at Frankford Junction, Pa., on the fifth of February, were an eastbound passenger consisting of a locomotive and ten cars and a freight which was switching across the main track. The passenger train was running at about 50 miles an hour and the engine and first five cars were knocked off the track. Three freight cars were wrecked. The collision was due to misreading the distant signal. Thirteen passengers and one trainman were injured, none of the injuries being classed as serious.

The train involved in the accident near Ranger, Tex., on the morning of the 8th, about 1 o'clock, was eastbound passenger No. 12. By the malicious misplacement of a switch immediately in front of the locomotive the train was turned into a side track and collided with freight cars standing there. Two freight cars were wrecked, and the baggage car and one coach were ditched. One trespasser was killed and three trainmen, ten passengers and three other persons were injured.

The trains in collision near Trussville, Ala., on the night of the 15th, were northbound freight No. 52 and southbound freight extra No. 6587. Both engines and ten cars were wrecked and many other cars were damaged. Both engineers and both firemen were killed or fatally injured and a brakeman was fatally scalded, and two employees were injured. The collision was due to forgetfulness on the part of the engineer of No. 52, who overlooked an order to meet the other train at Trussville.

Trains in the collision near Muskogee, Oklahoma, on the 16th, were a southbound passenger and a preceding freight. The freight had been brought to a stop because of striking a section motor car and was run into at the rear by the passenger train. The locomotive, caboose and six freight cars were wrecked. There was a light fog at the time and the view was obstructed by steam from an oil refinery which was hanging in low dense clouds. The flagman of the freight train was back 4,000 ft. and the passenger train was flagged by three different men, but none of the flags were seen by the engineer of the passenger train. The engineer was killed. The fireman jumped off and escaped serious injuries.

The trains involved in the collision at Gibbsland, La., on the 18th were westbound passenger No. 11 of the Vicksburg, Shreveport & Pacific, and southbound mixed train

*Abbreviations and marks used in Accident List:

re, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P. or Pass., Passenger train—F. or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

No. 22 of the Louisiana & Northwest. The collision occurred about 1:35 a. m. on a clear night. The passenger train, moving at good speed, ran into the mixed train on the crossing of the two roads, demolishing one freight car, wrecking the passenger engine and doing much other damage. Two men standing on the station platform at the left of the track were killed, and 15 persons on the platform and three employees were injured. There are no interlocking signals at this crossing and the rule requires all trains to be brought to a stop within 200 ft.; but in this case the passenger train was not stopped. The engineman had been in the service of the road only a year and a half though with a clear record; but he had had several years' experience on other railroads. He had been on duty less than three hours after being off duty two days. The Interstate Commerce Commission's report on this collision says that failure to bring trains to a full stop before passing over crossings has been observed in a number of other cases in that region; and the conclusion is reached that the rule is frequently violated. Evidence as to how the engineman of No. 11, having a bright electric headlight, came to run into the freight train, apparently without seeing it until he was within a few hundred feet of the crossing, is contradictory, and some of it apparently untruthful. So far as can be gathered from the commission's report the only tenable theory is that the engineman had been asleep until quite near the crossing.

The trains in collision near Charleston, S. C., on the 21st, were westbound passenger No. 17 and eastbound passenger No. 16 of the Southern Railway. Both engines were badly damaged and both enginemen and both firemen were injured. The conductor of train 16 was slightly injured.

The train derailed near Clayton, La., on the 4th, was westbound passenger No. 806. Moving at about ten miles an hour it ran into an open draw at the Tensas River and the engine and first two cars fell into the river. The fireman, the express messenger and three passengers were drowned or were killed by the fall and nine persons were injured. The engineman went down with his engine and was injured, but escaped from the cab after it fell into the water. The engineman was held responsible for the derailment, on account of failure to observe signals.

The train derailed near Ways, Ga., on the 17th, was southbound passenger No. 3, running at about 50 miles an hour. Four coaches fell down a bank and 47 passengers and one trainman were injured. The cause was not determined. The injuries were classed as slight.

The train derailed at Lake Butler, Fla., on the 13th, was northbound passenger No. 12. Striking a large tree which had been blown down and lodged on the track at a curve the engine and two cars were overturned. The engineman, fireman and one other employee were injured.

The train derailed at Pleasant View, Ky., on the 13th, was southbound passenger No. 33. The engine, baggage car and one passenger car were overturned. The engineman was fatally scalded and the fireman and one passenger were slightly injured. The derailment was caused by a piece of iron placed on the track by a child of six years.

The train derailed on the Danville & Western near Buford, Va., on the 18th, was westbound passenger No. 3. The rear car was thrown off the track by the loosening of a wheel and this pulled the rest of the cars and the locomotive with it. The train was running at 20 miles an hour. The conductor was killed and one passenger and three trainmen were injured.

The train derailed on the Pennsylvania Lines at Clarks-ville, Pa., on the evening of the 18th, was northbound passenger No. 475, drawn by two locomotives. Running at about 45 miles an hour, the whole train except one car at the rear was thrown off the track and three of the four coaches were overturned. The station building was destroyed. One

engineman and one fireman were injured, but all other persons on the train escaped with a shaking-up. The derailment is reported as due to breaking of a driving-wheel tire, the broken wheel causing the breaking of a rail.

The train involved in the accident on the Missouri, Kansas & Texas near Machens, Mo., on the night of the tenth, was southbound passenger No. 5. Fire discovered in a baggage car necessitated setting out the car; but this was not accomplished until the fire was beyond control. The car was destroyed together with express matter, mail matter and baggage. Estimated damage to express matter, \$15,000. Cause not determined.

The trains involved in the accident on the New York Central at Kingsville, Ohio, on the 28th, were westbound passenger No. 81, and two freight trains. The freights had been in a slight collision, a standing local train being run into at the rear by a through freight. The collision was a slight one, but it resulted in the derailment of a carload of carbide and this car fouled, or nearly fouled, the adjacent main track, on which No. 81 was approaching. The passenger train was flagged and its locomotive came to a stop exactly opposite the derailed car. The carbide apparently became ignited by fire from this locomotive and an explosion and fire resulting destroyed the baggage car of the passenger train and its contents, and the freight house and contents. The engineman and fireman of the passenger train were severely burned.

Canada.—Eight train accidents were noticed prominently in newspapers of Canada as occurring on lines in the Dominion in the month of February. None of these accidents appears to have been attended with fatal results, and five of them were reported as resulting in no injury to persons.

Electric Car Accidents.—On the Illinois Traction line near Springfield, on the 22nd, a butting collision between a passenger train, consisting of two sleeping cars, and a freight train of 13 cars, resulted in the death of one and injury of four persons. Near Cleveland, Ohio, on the same day, a rear collision on the Lake Shore electric road was reported to have injured five. On the 27th there was a derailment on the Hudson & Manhattan in the tunnel beneath Exchange Place station, Jersey City, N. J., injuring five passengers. Trains ran into street cars, injuring considerable numbers of persons, at Birmingham, Ala., Louisville, Ky., and Pottsville, Pa.

Federated American Engineering Societies Organized

A TOTAL OF 134 DELEGATES, representing 66 engineering and other technical organizations, responded to the invitation of the Joint Conference Committee of the four founder societies to meet in Washington, D. C., on June 3 and 4. The result of the two days' deliberations held at the Cosmos Club was the formation of The Federated American Engineering Societies, composed of societies and affiliations and not of individuals. Calvert Townley, of the American Institute of Electrical Engineers, and J. C. Hoyt, of the American Society of Civil Engineers, were elected chairman and secretary, respectively.

This is the culmination of the work started by the Joint Conference Committee, the invitation and the work preparatory to this conference having been carried on by this committee on its own initiative. While the idea of the formation of a large organization with the power and duties necessary to carry on public-welfare work wherein the engineer was concerned had met with favor wherever it was proposed, the methods proposed in the Joint Conference Committee's report was not so favorably received. Some attention had been given by the committee to the possibilities of reorganizing the present Engineering Council in order that it might

serve as a backbone or nucleus around which the larger organization could be built. However, no movement was started along this line at any time, the first action of the conference after the election of the chairman and secretary being the presentation of the following resolutions:

Resolved, that it is the sense of this convention that an organization be created to further the public welfare wherever technical knowledge and engineering experience are involved, and to consider and act upon matters of common concern to the engineering and allied technical professions.

Resolved, that it is the sense of this convention that the proposed organization should be an organization of societies and affiliations and not of individuals.

The result of this was that the discussion concentrated upon the questions presented therein. This brought forth a variety of opinions. The representatives of the American Association of Engineers, evidently believing that the new organization would possibly interfere with, or in some ways duplicate, their efforts in public welfare work, carefully sounded out the assembly on the question of a society composed of individuals. Outside of this society the question of an organization composed of individuals received but little attention, the chief objection to it being the difficulty attending its promotion. The fact was brought out that practically all of the active members of the local and national societies were members of two or more organizations and that as such was the case there would be great difficulty in securing a membership large enough to promote and carry on the desired work.

With the sentiment in favor of an organization composed of societies and affiliations, the American Association of Engineers yielded its point and, joining with the rest, made the vote unanimous. With the passing of the resolution, committees were appointed on constitution and by-laws, program, credentials and resolutions. The tentative program was ratified and the remainder of the first day's session was devoted to addresses by various engineers on subjects of interest and value to the engineers.

The second day's session was opened with the report of the Committee on Constitution and By-Laws. The constitution, as presented, was finally adopted with a few minor changes and one addition, a publicity clause insuring the maximum co-operation with the press. In brief, the constitution provides for an organization to be composed of national, local, state and regional engineering and allied technical organizations. The management will be vested in a body known as the American Engineering Council and an executive board composed of 30 members of the council, including the president, the four vice-presidents and the treasurer of the council. Representation on the council will be on a basis of one member for the first 100 to 1,000 members of a society and one for every additional 1,000 or major portion thereof up to a maximum of 20. This brought forth considerable discussion, the local societies claiming that the nationals would be too greatly represented. While this is in some measure true, it was shown that the affairs of the two were so closely allied and the memberships of the two were so closely interwoven that in reality it would make but slight difference. Members of the executive board will be elected by districts, the proportion being the same as on the council.

Funds for the financing of the new organization will be provided by contributions from each member-society equal to \$1.50 per member for the national and \$1 per person for the local, state and regional organizations. Several local societies objected to this on the basis that a large part of their membership consisted of non-voting members paying small dues and that the tax would be out of proportion.

Under the circumstances the constitution was interpreted to read that as each organization must submit its constitution and by-laws to the executive board before becoming a

member, it could at that time submit a statement showing the number of voting members or members upon which it wished its representation based. The board would then be in a position to judge fairly and to decide in each case what would be equitable.

Provision was made for co-operation with and the encouraging of local, state and regional organizations in the formation of affiliations for the purpose of considering public welfare matters. In inserting a publicity clause, a provision was made for the formation of a publicity committee and in order to further their work all meetings, except executive sessions of the board, were to be open meetings, and the books and minutes of the organization were to be open for transcription at any time.

The constitution and by-laws were adopted by the conference by a unanimous vote of all voting, although several societies refrained from casting a vote, even though it was understood by all present that any decision made by a delegate was not binding upon his society. The largest organization not voting was the American Association of Engineers, whose representatives refrained from voting on the basis that as they disagreed with certain sections of the constitution they did not feel at liberty to ratify it. They did wish, however, to assure the conference of their sincere intention to co-operate to the best of their ability and along such lines as the Federated American Engineering Societies would formulate, leaving the question of ratification to a vote of the association itself.

The only delegation present with full power to accept or refuse any action of the conference was that of the American Society of Mechanical Engineers, who ratified the constitution in the name of that society. They further stated that the society was ready to enter the federated societies at any or such time as the latter found convenient to handle such work.



From the San Francisco Chronicle

"Three Strikes and Out"

Train Operation By Signal Indication*

Train Orders vs. Signal Indication; Single-Track Operation Without Written Train Orders

By Henry M. Sperry, M. Am. Soc. C. E.
In Two Parts—Part II

THE FIRST PART of this article contained a condensed description of our two principal methods of directing train operation: (a) the time interval method (clocks, time tables and train orders, with the flagman as a necessary adjunct) and (b) the space interval method or block system (an absolute interval of space between trains); this as a preliminary to the study of the problem of train operation by signal indication. On double-track roads this problem was never a serious one, except as it has been complicated by attempts to operate the system with incomplete facilities, as, for example, allowing second-class trains to clear superior trains at sidings midway between block stations. On single-track roads progress in the solution of the problem has been slow.

This second part will describe in some detail the actual work of the train despatcher under the two methods.

Under the first and time-honored method, the train des-



Bad Company for a Train Order

pacher's whole day, so far as it manifests itself outwardly, is devoted to the preparation of written orders, getting them delivered to conductors and enginemen and making for himself a satisfactory record that each act has been completed infallibly.

Under the second method of direction by signal indication, the despatcher is relieved of his chief burden, that of avoiding "small errors which produce great horrors," and the whole business of train operation is *simplified, accelerated* and made *safer*. These commonplace terms are so familiar that we become careless of their significance, but each one of them signifies, in itself, an element of importance on every busy railroad; for the despatcher's office is the nerve center of the whole money-earning machine, and its smooth and unobstructed action should never be regarded as of minor importance. That it should function perfectly at all times is as important in its field as that the general manager's brain should always be alert to every act and every neglect of his dozen subordinate officers. The despatcher's work should be *simplified* in every possible detail and to the last degree, so as to reduce internal friction—if I may borrow a me-

chanical term. Everything possible should be done to enable him to make every move in the least possible *time*, because losses of minutes at his desk may and often do result in losses of dollars out on the road. The prime duty of making train movement *safer* goes without saying. This essay is addressed mainly to the question of economy; but, fortunately, the pursuit of economical financial results and of greater security to the lives and limbs of passengers and employees can be treated as a single pursuit. There is no incompatibility and there should be no division of purpose.

Train Orders vs. Signal Indications

Train orders are written instructions that must be delivered to the conductor and engineman of the train. They must be correctly prepared, transmitted, delivered and understood. *They must not be forgotten.* On railroads *not* equipped with controlled manual or automatic block systems, safety of operation depends entirely upon the human element, for there is no check, either electrical or mechanical, to prevent an improper train movement should an error occur in the preparation of the order or should the order be misunderstood or forgotten.

Signal indications are instructions given by the aspects of fixed roadside signals. The subject is here dealt with as it relates to railroads equipped with the controlled manual or the automatic block signal system. Instructions given by signal indications require less effort in preparation and transmittal than do written instructions. *They are delivered to the engineman through the medium of the signal.* The language of the signal is easy to understand and difficult to forget.

Because the aspects are few in number, there is little opportunity for misunderstanding. Of more importance, the instructions conveyed by the signal are given at the point where they are to be executed, and no lapse of time in which to forget them is possible.

Safety of operation under signal indications does not depend entirely upon the human element as in the time interval method.

COMPARISON OF THE TWO METHODS

Psychologists tell us that the strength of a mental impression is greatest at the time it is received and grows weaker with the lapse of time. In the train order method, especially with the more important class of orders, the necessary lapse of time between the receipt and the execution of the order is an element of weakness.

For example, take a train order of Form A, reading: "No. 1 meet No. 2 at B." This order, as is often the case, may be for execution at a siding many miles distant. At the time that the train is to execute the order the engineman's mental impression of the order should be strong and clear. Because of the lapse of time—perhaps an hour or more—and the multitude of subsequent impressions, the train order impression is too often weak and blurred. This point has been well brought out in a recent article by George Bradshaw, supervisor of safety of the Pere Marquette Railroad, in which he exhorts enginemen to take care not to confuse their mental impression of an important train order with other impressions

*The first part was published in the issue of June 4.

not relating to it. He presents a picture which is a striking illustration of what may flash through the mind of an engineer during the lapse of time incident to the train order method.

The train order calls for deferred action; the signal indication calls for immediate action. The movement required by a train order is seldom made upon receipt of the order. The signal indication is a "do-it-now" order.

Train operation by the train order method requires the delivery of the order to the train. If the train is in motion it must slacken speed or stop to receive the train order. The signal indication method, on the contrary, does not require the train either to slacken speed or to stop.

The train order method, when it thus retards the movement of trains, causes loss of time to cars, engines and men. Furthermore, it unnecessarily obstructs the particular sections of track occupied by the delayed trains, and it requires the consumption of additional fuel to regain the normal speed. The train order method therefore reduces the railroad's output of transportation, and increases train costs. To produce and sell transportation a railroad must keep its trains moving; hence any method that unnecessarily retards or stops the movement of trains tends to destroy production.

AMERICAN RAILWAY ASSOCIATION'S RULES FOR TRAIN OPERATION BY SIGNAL INDICATION

Without the block system the train order method, as usually operated, is a means both of safety and convenience (convenience with important drawbacks, which are customarily regarded as necessary evils). As soon as regular trains are much behind time they must be moved regardless of the time table. This necessitates the use of dispatchers' orders to keep the trains out of each other's way—to give them the right to the road. This is a safety function. But with block signals the trains, without dependence on the dispatcher, are prevented from running into one another. The dispatcher's function is not so distinctively an element of safety, but his orders continue to be necessary as a convenience, for as long as passenger trains are superior to freight trains, delayed passenger trains will cause delays to freight trains, and delayed freights will delay still other freights. It is the dispatcher who must reduce or prevent these delays. If trains were all of the same class, and the absolute block system were universal, there would be no need of the dispatcher for safety and very little need for convenience.

When we speak of train operation by signal indication we mean the use of fixed roadside signals not only as (1) the means of preventing a train from colliding with the preceding train or as (2) a means of indicating to a train which of two or more diverging routes it shall take, but also, in addition to either or both of these, as a means (3) of indicating, at the will of the dispatcher, under certain circumstances, whether or not a train shall actually make every move which the signals, if not controlled by the dispatcher, would permit it to make.

For example, an automatic block signal indicates to an approaching freight train that it may proceed from B to C. The road is clear. But the dispatcher desires to have the train enter a side track half way between B and C for the purpose of allowing a passenger train to pass and run ahead of the freight. To carry out his purpose he causes the automatic block signal to give a modified indication. He uses the signal where under former methods he would use the time-consuming process of a written order conveyed by wire to a station operator.

Train operation by signal indication is not new. As early as 1903 the subject was under consideration by a committee of the American Railway Association. The problem at that time was stated as follows:

"The term 'operation without train orders' is, of course,

something of a misnomer. The system contemplates rather a change in the manner of delivering orders, the method of working under them, and the relief of the engine and train crews from the frequent necessity of performing more or less complicated arithmetical problems in order to determine exactly what their orders are. With a train scheduled at a certain time for every station on a division and with an order requiring it to run one hour and 30 minutes late from a certain point, the possibilities of error in the calculation of time are large. The fact also that freight trains are required to keep out of the way of trains of a superior class running in the same direction involves either undesirable delays in waiting at passing stations or the taking of long chances in getting to the next passing point.

"The plan in brief is, on double track, to allow all trains to proceed under a block signal showing clear, without regard to any train of superior class that may be following. The rule on the time table covering this point is: 'The right of any train to proceed will be indicated by the position of the train order or block signal. A clear signal will give to any train for which it is displayed the right to proceed in advance of first-class trains without train orders.' The control of the train is thus vested in the dispatcher. The conductor, while he is not relieved of responsibility and is required to keep himself informed as to trains of superior class, is, nevertheless, relieved of the necessity of guessing whether he has time to make a certain passing point or of asking of the dispatcher permission to do so. There is, therefore, a simplification of the work of dispatching, and the conductor has only to push his train along until warned by a signal against him of the necessity of making for a siding."

The American Railway Association, by the adoption in October, 1903, of Rules D-251, D-254, officially recognized train operation by signal indication on double track. The title of the rules is:

"Governing the movement of trains with the current of traffic on double track by means of block signals."

In April, 1904, Rules D-261-D-264 were added for the movement of trains *against* the current of traffic on double track by means of block signals.

Train Operation by Signal Indication

on the Burlington Road

The Chicago, Burlington & Quincy Railroad, as early as 1900, began operating trains on double track between Chicago and Burlington "with the current of traffic by block signals" and without written train orders. The rules were few and simple. After several years' trial the net results were summed up as follows:

"A large saving in the time of getting trains over the road, due to the absence of any necessity for waiting for a train of superior class which may or may not be on time; a simplification in train dispatching, owing to the lack of a necessity on the part of the conductor to state that he has time to make one station farther on and to secure the dispatcher's order to proceed; and a measure of safety due to getting rid of the mathematical and chronological computation above referred to.

"It was formerly required on the Burlington that freight trains should keep out of the time of the fast mail by an interval of 10 minutes; of the time of an ordinary passenger train by an interval of five minutes. Of this responsibility the conductor of the freight is now relieved. On a busy section, as between Chicago and Mendota (83 miles), it is estimated that there is a saving of one-third in delays to trains."

The late F. C. Rice, general inspector of transportation of the Chicago, Burlington & Quincy, the man mainly responsible for the introduction of this method of moving trains, said in 1911: "Our scheme of running trains on double track by block signals has fulfilled our most sanguine expect-

tations. It has saved our company a great many dollars, I am sure, over the delayful practices of train rules and train despatching. We have not had an accident of any sort resulting from the change in practice—not a life lost nor a person injured."

Economic Value of Train Operation

by Signal Indication

On *double track* it is now the general practice to run extra trains without train orders. Many roads are also using a distinctive form of signal at non-interlocking switches for directing trains to "hold main" or "take siding." A most notable step in this direction was made by the Erie Railroad on the Susquehanna division in 1910 by the use at non-interlocked switches of signals giving the three indications, "hold main," "take siding," or "stop."¹¹

J. J. Turner¹² in his book on "The Telegraph as Applied to Train Movement" as early as 1885, set forth the advantages of train operation by signal indication on *single track*. Mr. Turner quotes an article by E. W. McKenna¹³ on "A New Theory of Train Movement," from which the following is taken:

"Assume a blocked section of single-track railroad 25 miles in length after the following method: The passing sidings are five miles apart and arranged on either side of the main track and joining the main track in front of a signal station, the double track rule 'keep to the right' to apply in the use of these sidings. The junctions of the sidings with the main track should overlap,¹⁴ that is, run by each other, so that trains from both sidings can move into the main track simultaneously.

"The four switches of the passing sidings to be controlled by the operator in the signal station are operated by the electro-hydro-pneumatic process, by which switches can be set at any distance from the point where the power is applied. This station may be on a crooked piece of line and the switches at the remote ends of the sidings not in the vision of the operator. Hence that he may know, first, the position of the switches at every movement back and forth, the switches will telegraph him their position; and second, to prevent him from throwing the switch under a moving train, the train itself by action of a track circuit will lock the switch in the position it is in when the first contact of the train closes the circuit, and keep it locked until the train has cleared the switch."¹⁵

"The procedure will then be as follows: In the block section there will be five blocks averaging five miles each in length. At one of the termini will be located the despatcher. Priority in rights of trains of a superior over an inferior class, as well as all questions connected with the movements, will rest absolutely in the hands of the train despatcher.

"A train approaching a signal station from either direction when one mile distant will announce itself by closing a circuit and setting an indicator. Upon this the operator will report to the train despatcher, 'train from east.' If the train from the west is to be passed the despatcher will respond 'side track,' and the operator will signify his understanding by repeating the same word and will set the switch leading into the passing siding.

"To place the matter more fully in the hands of the man who does the thinking for all these train-runners and to protect him against the possible mistakes of his operators in displaying the wrong signal, it is proposed to lock the main

clearing signals at danger, by electricity, under the control of the despatcher, so that an operator cannot clear a train even when instructed to do so until the train despatcher opens the circuit that locks the signal.

"What advantages follow this? First, the elimination of the danger of accident connected with the present system. The factors that produce disaster in the handling of train orders have been discussed. They are the despatcher, the operator, the conductor and the engineer; any one of these four can produce an accident. By eliminating any one or more of these factors you make the responsibility concrete, for an individual responsibility fills its office better than a divided one.

"Accidents have been known where a conductor in doubt as to a point sits in his caboose and depends on 'Jim' in the engine to understand it. Jim is befogged on the same question, but depends on 'Bill' in the caboose, and the result of this division of responsibility is disaster.

"Under the theory discussed, the thinking is all done by



one man, the responsibility all rests upon one man, and he has under his absolute control all the appliances for carrying out the system and has only in a small degree to depend upon the intelligence and assistance of the operators and trainmen.

"The next proposition is the economies accomplished by saving of delays to trains. Upon this 25 miles of track assume that 100 trains pass daily; it is not an extravagant calculation to assume that 100 orders are issued daily. A delay of four minutes for the manipulation of each order is equal to 400 minutes, or 6 hours and 40 minutes a day. In this time a train moving at the rate of 20 miles an hour will travel 133 1/3 miles. Multiply this by 365 days and it pro-

¹¹See "Train Operation by Signal Indication," for description of the Erie practice. H. M. Sperry, N. Y.

¹²Now vice-president of the Pennsylvania system.

¹³Formerly vice-president of the Chicago, Milwaukee & St. Paul.

¹⁴See article by L. F. Loree, "Lap Sidings on the Cleveland & Pittsburgh," *Railroad Gazette* September 13, 1901.

¹⁵Outlying switches are now operated electrically by low-voltage switch machines. These machines are for operating switches located at a long distance from the station. They will operate a switch in 35 seconds on 20 volts from a primary or secondary battery.

duces 47,650 train miles, which is certainly an addition to efficient motive-power capacity."¹⁶

Mr. McKenna summed up the value of this method of operating a railroad as follows:

"Its capacity can be increased from 25 to 40 per cent, its train movement simplified and expedited, and a largely increased mileage produced from its motive power, with a reduction of the expenses in the wear and tear of equipment and consumption of fuel entailed by the frequent and unnecessary stoppages of trains, and in addition thereto the safety factor largely increased."

Single Track Operation Without

Written Train Orders

A number of isolated installations of automatic block signals on short lengths of single track are in use today for



Delivering a "19" Train Order

operating trains by signal indication. As yet there is no such installation in the United States extending over an entire single-track division.

With the notable improvements that have been made in automatic block signaling for single track, the day is close at hand when trains will be "safely moved on single track without train orders and with but few train rules."

The following description of the operation of a single-track road in India by signal indication and without written train orders tends to confirm the above statement:

"Until recently traffic on the East Indian Railway has been handled without any officer corresponding to the American train dispatcher, dependence being placed entirely on the station masters or agents using block instruments on single-track lines. It has been found that under this system frequent unnecessary delays to freight trains resulted from the desire of the agents to avoid the necessity of explaining delays to passenger trains.

"In order to relieve this situation a centralized control system has been installed. The movement of trains is placed under the control of an officer called a train controller, who directs the station masters by telephone as to which train may be held and which sent forward. The system differs

only slightly from that in use on many double-track lines in England, where controllers or dispatchers direct block operators as to the movements of trains. On the Indian railways the station masters direct the signalmen as to the throwing of switches and setting of signals.

"On the single-track line between Allahabad and Tundla, a distance of 262.5 miles, traffic consists of 21 trains each way in 24 hours, freight trains having a length of about 1,500 ft., with a possible load of 850 tons, and the passenger trains consisting in some cases of 12 coaches.

"This section is divided into four control districts, ranging in length from 57 miles to 86 miles; each in charge of a controller throughout the 24 hours, these men working in three shifts of eight hours each. In place of the train sheet in use by American dispatchers, these Indian railway controllers make use of a plug board¹⁷ and a graphic sheet or chart. When a train enters the section the controller takes a plug from the board and inserts it in a socket on the diagram corresponding to the terminal station. As it progresses from station to station its arrival and departure are reported by telephone to the controller, who shifts the plug correspondingly. Each plug is marked with the number of the train it represents, and its color indicates the class of the train. A station is not permitted to accept or despatch a train without orders of the controller, but ordinary single-track block operation remains in force. When a train is to be side-tracked the controller instructs the station as to which siding is to be



"Proceed, Regardless of Following Superior Trains"

Instructions Given by Signal Arms; No Paper; No Slackening of Speed

used, and as long as the train remains on that siding its plug on the controller's board is left at that point.

"The permanent record of the movement of trains is made on a chart or printed form, showing the list of stations in a column at the left, and with vertical rulings representing five-minute intervals for a period of eight hours, and a horizontal line opposite each station.¹⁸ Different colored pencils are used for different classes of trains with which lines are

¹⁷J. J. Turner, in "The Telegraph as Applied to Train Movement" (1885), describes the use of a plug board in train despatching on a busy piece of single track railroad. E. W. McKenna, in 1882, devised this board and put it into use. Mr. McKenna was at that time superintendent of the Jeffersonville, Madison & Indianapolis, now a part of the Pittsburgh, Cincinnati, Chicago & St. Louis. The plug board is a crude track model.

¹⁸See article by L. C. Fritch (now vice-president of the Chicago, Rock Island & Pacific Railroad), "Train Dispatcher's Graphic Chart," used on the Ohio & Mississippi Railway in 1891.—Engineering News, September 5, 1891.

¹⁶The I. C. C. abstract for 1918 (Class 1 roads) shows a gross revenue per freight train mile of \$5.33. At this rate 47,650 freight train miles will total \$253,974.50. For a 100-mile division the amount will be four times this, or \$1,014,898.

drawn across this diagram, the intersecions of these lines with the horizontal lines indicating the time at which each train passed the given stations. As each chart represents eight hours' work, the three charts each day form a complete record for the district superintendent.

The installation of this system has effected important operating economies. The number of trains operated has increased 10 per cent, as indicated by the monthly summaries, the increase in the number of through freight trains for these periods being 15 to 35 per cent. In spite of this increased number of trains, the average time on the road was decreased 10 to 15 per cent.¹⁹

The important economies obtained on the East Indian Railway constitute a most favorable showing for single-track operation by signal indication, or operation without written train orders.

Another record of single-track operation by signal indication—a very remarkable one and not to be lost sight of—was the operation by the Jeffersonville, Madison & Indianapolis

on single track without train orders and with but few train rules."

Operating Efficiency

The efforts that have been made to increase operating efficiency have largely been in the direction of:

1. Increasing the tractive power of the locomotive.
2. Increasing car capacity.
3. Increasing track facilities by the addition of second, third and fourth main tracks, longer passing sidings and larger yards and terminals.
4. By the electrification of steam-operated roads.

These improvements, which require large expenditures, may fail to show an adequate return if the means for directing train operation does not keep trains moving.

Progress

The progress chart (Fig. 1) visualizes the progress made in equipping the railroads of the United States with block signals.²⁰ The relative progress of the two block systems,



Train Dispatcher's Office, East Indian Railway, Allahabad

Graphic Train Sheet and Hand Operated Track Model

in 1882 of 225 trains a day over the Louisville bridge and adjacent tracks entirely by signals without the use of written train orders. This handling of a heavy traffic entirely by signals when the science of signaling had not reached its present high development was a most notable performance.

With the present development of the science of signaling, the equipment of a single-track division of a railroad with automatic block signals, interlocking signals and telephone train despatching for directing the movements of trains by signal indication without the use of written train orders, is in every detail simple and feasible, and can be carried out under arrangements which have the approval of the most conservative railroad authorities.

A single-track railroad thus equipped will fully meet the requirements of the block signal system described in a handbook, "Train Operation," written by William Nichols, for 10 years chairman of the board of examiners, Southern Pacific Company.

Mr. Nichols describes this block system as follows:

"With a proper block system, with signals to govern train movements in and out of sidings, trains may be safely moved

measured in miles of track, is shown in detail in the following table of the 12-year period from 1907 to 1919:

TABLE 1—INCREASE IN TWELVE YEARS

	1907, January 1	1919, January 1	Total increase	Avg. annual increase
	(Miles of track)		(Miles of track)	
Manual block system.....	51,685	69,830	18,145	1,512
Automatic block system.....	12,745	59,458	46,713	3,893

The average annual increase of 3,893 miles of track of the automatic block system is $2\frac{1}{2}$ times the average annual increase of the manual block. In other words, for every mile of manual block installed, $2\frac{1}{2}$ miles of automatic block was installed. From the standpoint of comparative progress this rate of increase of the automatic block over the manual block might be regarded as satisfactory. Yet it is not satisfactory when compared with the average annual increase of main-track mileage.

On January 1, 1918, the total miles of track of the roads equipped with automatic block signals was 57,084 miles. Deduct this from the total of 267,574 miles of main track

¹⁹See Railway Signal Engineer, July, 1917.

²⁰The Progress Chart was prepared from statistics of the Interstate Commerce Commission.

in 1918 and there remains a balance of 210,490 miles of main track Class I roads²¹ not equipped with automatic block signals.

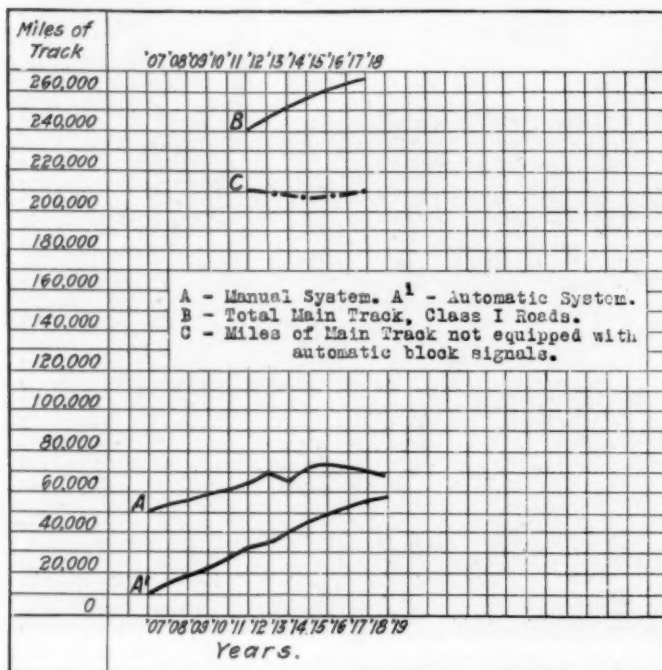
Table 2 shows the relative progress of main-track mileage and block-system mileage for six years, 1912 to 1918.

TABLE 2—AVERAGE ANNUAL INCREASE, 1912-1918

	1912, January 1	1918, January 1	Total increase	Avg. annual increase
	Miles of track		Miles of track	
Main track Class I roads....	*246,747	26,574	20,827	3,471
Manual block system.....	66,072	71,493	5,421	904
Automatic block system.....	33,425	57,084	23,659	3,943
Main track not equipped with automatic block system.....	213,322	210,400

*Estimated as of January 1, 1912.

The significant point in this table is that the average annual increase for the automatic block system, 3,943 miles, is only 472 miles in excess of the average annual increase for main-track Class I roads (3,879 miles). Therefore, unless there is a marked increase in the annual mileage of the automatic block system, the main-track mileage and



Progress Chart, Railroads of the United States

automatic block mileage will continue to run nearly parallel with each other. It is acknowledged universally that the automatic block system is the ideal system of signaling for economizing track facilities and promoting prompt movement of trains, and also the best preventive of collisions. And its usefulness is not confined to lines of dense traffic. It is in use on some lines where the volume of traffic is not to be classed as heavy; but its value is evident, and is appreciated as definitely on such lines as on those which are more constantly busy.

Any railroad which aims to give the public the best possible service has a duty not only to keep up with "the state of the art" according to the very easy standards in this respect which are laid down by the courts, but to establish the *highest possible standards*. Establishing high standards at large expense may sometimes seem, because of the indifference, ignorance or hostility of legislatures and municipal and other authorities, to be a thankless task, and it is not to be denied that some of the difficulties are hard to remove. But

²¹Class I roads are those having each an annual operating revenue above \$1,000,000.

there is still to be kept in mind the broad view, looking well to the future, that high standards of safety and efficiency do afford the most satisfactory ultimate results.

Transportation is the carriage of persons and commodities from one place to another. Transportation means movement. Movement, to be efficient, must be directed. The means for directing movement must be efficient. Automatic block signals constitute the ideal means for the direction of movement—that is, for the *direction of train operation*.

Commission Announces Plans for Use of \$125,000,000 for Equipment

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION having on May 29 afforded opportunity to all who wished to be heard in regard to the general principles which should control its action in recommending to the Secretary of the Treasury loans from the revolving fund of \$300,000,000 created by section 210 of the Transportation Act, on June 7 made the following announcement:

Equipment

It is essential that a substantial portion of the fund be put to work at once to aid in acquiring new equipment. The appropriation for this purpose will be fixed for the present at \$125,000,000, to be distributed substantially as follows:

To aid in acquisition of freight cars, \$75,000,000.

To aid in acquisition of locomotives, \$50,000,000.

Cars. Since freight cars are interchanged and enter into general use subserving the general transportation needs of the public regardless of ownership, the commission will endeavor to apportion the \$75,000,000 in such manner as will bring about the acquisition of the largest number of cars. The National Association of Owners of Railroad Securities has urged the organization for this purpose of a national equipment corporation. There are strong considerations in favor of such a project and by a recent amendment to section 210, Congress has authorized loans from the revolving fund to such a corporation.

The commission cannot undertake the formation of an equipment corporation or corporations, but upon presentation of a definite, well-matured and workable plan, capable of application in the immediate future, it will give preferred consideration to applications for loans to or for the purpose of such a corporation. The commission believes that it is both desirable and practicable to devise such a plan in the case of refrigerator equipment, and particularly commends this matter to the attention of the railroad executives.

The \$75,000,000 apportioned for freight cars will be used primarily to aid in the acquisition of 20,000 refrigerator cars. The allotment for refrigerator cars will be made first to those carriers or companies which offer the largest proportional contributions to meet the advances of the government, and will be continued in the order of proportions of carrier contributions until the total of 20,000 refrigerator cars is provided for or the applications are exhausted. Other things being equal, preference will be given to loans to or for the purpose of equipment corporations supplying the needs of a number of lines.

After providing allotments for refrigerator cars allotments for other freight cars will be made in a similar manner and with similar preferences. Where carriers, however, offer free of prior liens running gear, parts of cars or types of cars which by construction, reconstruction or reinforcement may be converted into modern and efficient equipment at an earlier date than is possible by new construction, preference will be given to carriers making such offer over others tendering the same or substantially the same proportional contributions to meet the loans.

Locomotives. The \$50,000,000 for locomotives will be used first to aid in acquiring freight and switching locomotives and will not be employed for passenger locomotives until and unless applications for freight and switching locomotives are met. It will be the rule to require applicants themselves to contribute at least 50 per cent of the cost of the locomotives. Other things being equal, preference will be given to applications for loans to or for the purpose of equipment corporations.

If the demand should be in excess of the allotment, with the possible exception of equipment corporations, applications for less than 25 locomotives will first be filled, 25 locomotives will be applied in order to the remaining applications beginning with the lowest, and the remainder will be used to complete the applications so far as possible in order beginning with the lowest. This will be done for the purpose of securing distribution of locomotives throughout the country.

Applications for loans to or for equipment corporations sought in whole or in part to meet motive power needs of short lines will be considered in this connection.

The commission will give consideration to the applications of any carriers unable to finance as much as 50 per cent of the cost of freight or switching locomotives, and for good cause shown will advance the necessary amounts before recommending loans for the acquisition of passenger locomotives.

Additions and Betterments

The appropriation for loans to aid in additions and betterments which will promote the movement of cars will be fixed for the present at \$73,000,000.

Loans for this purpose will not be recommended except upon satisfactory evidence that the additions and betterments will relieve congestion or otherwise enable existing equipment to do more work. The Association of Railway Executives has stated to the commission that its committee proposes to examine the applications of the various companies and recommend for favorable consideration the most pressing of such additions and betterments. The commission will expect such recommendations reflecting the best judgment of the executives in the interest of the entire country, and will be guided in its action by an endeavor to so use the fund that the best net results may be secured in the movement of freight.

No loans for this purpose will be recommended without satisfactory assurance that the government funds will be met by such contributions from the carriers as it is within their power to furnish.

Maturities

The appropriation for this purpose will for the present be fixed at \$50,000,000.

The commission will deal separately with companies seeking loans to meet maturities, with due regard to the principles announced in the following quotation from a report of the committee of the Association of Railway Executives:

"In the judgment of your committee, every effort should be made, by extension or refunding whenever possible, to take care of all 1920 maturities, and to avoid calling upon the revolving fund except in extreme cases to protect the solvency of companies."

It will be the policy of the commission not to recommend loans in cases where applicants have not clearly exhausted every effort to take care of maturities by extension, by refunding and by every other means; and all applications for loans to meet maturities should set forth as definitely as possible by whom and in what amounts the maturing obligations are held and what steps have been taken to extend, refund or otherwise provide for them. The commission will emphasize the necessity for self help in all cases, and will expect applicants to assume their fair share of the burden.

The appropriation for loans to short line railroads will be fixed for the present at \$12,000,000. The Short Line Railroad Association should submit, in accordance with the fore-

going principles, its recommendations, both with respect to distribution of this allotment for short-line railroads tentamember roads and with respect to non-member lines, for the tively fixed at \$12,000,000.

In General

No loans will be recommended for any purpose except upon evidence that the prospective earning power of the applicant and the character and value of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor, and to meet its other obligations in connection with such loan.

The commission is of the opinion that the contributions of private capital to meet the loans of the government should be obtained at reasonable interest charges. These funds will be invested not alone for the purpose of securing direct returns but for the purpose of gaining the indirect benefits which will accrue if carriers are enabled better to meet the transportation needs of the country. It should be possible to obtain these contributions in part from the shippers of the country who are suffering from inadequate transportation. A proper spirit of co-operation should make it possible to secure private funds at rates not in excess of the rate which the government itself accepts.

New or Amended Applications

Many of the applications which have been filed with the commission are at variance with the needs which the applicants have indicated to the Association of Railway Executives, and applicants have frequently failed to grasp the two prerequisites which the law affixes to a recommendation for a loan under section 210, to wit:—

(1) A finding by the commission, that the making in whole or in part of the proposed loan by the government is necessary to enable the applicant properly to meet the transportation needs of the public, and

(2) A finding by the commission, that the prospective earning power of the applicant and the character and value of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor, and to meet its other obligations in connection with such loan.

Many applications also were filed or withheld while amendments to the Transportation Act were pending.¹ It is evident that a fair and comprehensive administration of the act requires that all applications be amended or filed in the light of the principles above set forth, and of the knowledge now available as to the purposes and limits of the law. Opportunity will therefore be afforded to amend and supplement applications already on file and to file new applications so that all necessary information may be supplied to enable the commission to pass upon the propriety and expediency of recommending the loans.

Where applications have been filed in accordance with the commission's order of April 23, 1920, amendments may be made in summary form, referring to previous application and to this circular, and setting forth the amount of the loan now desired, the term for which it is desired, the purposes of the loan and the uses to which it will be applied within the principles above announced, the present and prospective ability of the applicant to repay the loan and meet the requirements of its obligations in that regard, the character and value of the security offered, and the extent to which the public convenience and necessity will be served. The amendments should be verified and should show authority from the board of directors as provided in original form.

The original amendment or new application should be accompanied by 11 additional copies, and, except in cases of maturities, one additional copy should be forwarded to the Association of Railway Executives, 61 Broadway, New York, where recommendations are to be made by that body, and one additional copy of short line amendments or new appli-

cations should be forwarded to American Short Line Railroad Association, 706-713 Union Trust Building, Washington, D. C.

Amendments and new applications should particularly show:

1. In case of equipment loans, (a) the kind and number of units and cost per unit and total cost, (b) the contribution to be made by the carrier to meet total cost and how such contribution will be financed, (c) whether it is proposed to employ loan to secure cars to be placed under control of a refrigerator car company or other equipment corporation, or to secure cars for individual equipment of the applicant.

2. In case of loans for additions and betterments, (a) why applicant is unable itself to finance the project, (b) what efforts applicant has made to do the work without government aid, (c) how and to what extent the proposed additions and betterments will facilitate the movement of cars, (d) the plan and details of cost of the work proposed, and (e) the proportion of total cost which will be financed by the applicant.

3. In case of loans for maturities, (a) what efforts carrier has made to finance the maturities by extension, refunding or other means, (b) as far as possible by whom and in what amounts the maturing obligations are held and the reasons the holders give for failure or refusal to extend or refund, (c) how much of the burden of financing the maturities applicant proposes to itself assume and how, (d) why applicant's regular bankers have been unable to come to its assistance, (e) whether the aid of other bankers has been solicited or public bids invited, and (f) whether there is on applicant's board of directors any member who is an officer, director or representative of any bank, bankers or trust company, stating his name and position.

Time Extended for Filing Applications

and Amendments

The time for filing applications and amendments for consideration in the first general plan of distribution is extended to June 19, 1920. At the hearing on May 29, 1920, the representatives of the Association of Railway Executives indicated that the association would submit recommendations as to the amounts to be apportioned to the several roads out of the appropriation for each general purpose upon statement by the commission of rules of apportionment. It is desired that such recommendations be furnished so that the general distribution may commence not later than June 26, 1920. In the meantime, however, the commission will continue to act upon such individual applications as, in its judgment, require immediate attention.

The National Association of Owners of Railroad Securities is preparing to secure a charter under the general law, for the formation of a corporation to be used in the acquisition of equipment by such railroads that desire to purchase equipment through this source.

Annual Government Signal Bulletin

THE INTERSTATE COMMERCE COMMISSION has issued its annual bulletin showing the mileage of railroad in the United States on which the block system was in use on January 1, 1920; and the total length of railroad operated under the block system, both automatic and non-automatic, as shown in table No. 1 is 101,884 miles; this on railroads whose lines operated for passenger traffic aggregate 194,595 miles. The total mileage of railroad signalled, as here stated, is not exact, as there is a considerable mileage of road operated jointly in which the same mileage is reported by both of two roads. This duplicate mileage amounts to 314 miles, making the apparent net mileage of road under the block system 101,570 miles.

The principal totals of table No. 1 are as follows (miles of road):

	Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918
Automatic	37,968.8	36,989.4	34,799.0
Manual	63,915.4	62,908.3	64,155.0
	101,884.2	99,897.7	98,954.0

We copy the usual table from the bulletin showing the principal items in which there is an increase in the mileage of road operated under the block system—and also the prin-

PRINCIPAL INCREASES AND DECREASES IN 1919

	Increase.		Decrease, nonauto- matic.
	Automa- tic.	Nonauto- matic.	
Atchison, Topeka & Santa Fe System.....	195.6		47.4
Chicago & Northwestern.....			134.0
Chicago, Burlington & Quincy.....	186.6		186.7
Chicago, Lake Shore & South Bend.....		55.2	
Chicago, Milwaukee & St. Paul.....	11.2	203.5	
Chicago, Rock Island & Pacific.....			83.8
Cleveland, Southwestern & Columbus.....			86.0
Denver & Rio Grande ¹		116.0	
Fort Worth & Denver City ¹		114.4	
Grand Trunk Railway System ²	22.7	843.9	
Great Northern.....	131.4		
Illinois Central.....	130.0		
Yazoo & Mississippi Valley.....	50.8		
Los Angeles & Salt Lake.....			44.2
Louisville & Nashville.....	67.5	30.6	
Missouri, Kansas & Texas.....	26.4		
Northern Pacific.....	90.6	13.8	
Pennsylvania—Eastern lines.....		59.3	
Pere Marquette.....	48.3		
Southern.....	84.6		
Southern Pacific System:			
Houston & Shreveport.....		39.8	
Houston & Texas Central.....	12.5		35.5
Houston, East & West Texas.....		188.5	
Pacific System Lines.....	8.8	251.3	
Wabash.....	29.1		29.1

¹Roads which have not heretofore reported block signal mileage.

²The increase indicated in non-automatic block signal mileage is due to the road's failure to report properly in the preceding year.

cipal decreases. The total of the first column in this table is 1096.1 miles. This is larger than the net increase in this column as shown by table No. 1 which is 979.4 miles; indicating apparently some errors in reporting for the previous year.

The foot notes to the large table indicate, as usual, numerous sections of road, some of them of considerable length, which are equipped with automatic block signals, but which are used only by freight trains and the mileage of which, therefore, does not appear in the tables.

The total of the second column in the small table is 1072.4 miles after deducting the 843.9 miles reported by the Grand Trunk; and this smaller total is still larger by 425.7 miles than that of the third column, showing decreases, which totals 646.7 miles.

In table No. 2, showing kinds of automatic signals in use, there is a total of 1108 miles of road on which the signals are not classified; in this column, which includes "light" signals, a length of 595 miles of road is reported by the Chicago, Milwaukee & St. Paul (nearly all single track), which indicates an increase of 192 miles of road equipped with light signals on that company's lines.

The Chesapeake & Ohio reports 21 miles of road, single track, on which automatic train stops are in use; 14 miles more than was reported the year before.

Telephones are now in use for transmission of train orders on 119,554 miles of road, 6,114 miles more than was shown in the reports made one year before.

"PEACE GARDENERS" are the popular class nowadays on the Cumberland and Connellsville divisions of the Baltimore & Ohio; employees raising vegetables along the railroad right-of-way; the same who in 1917 and 1918 made "war gardens."

People, As Well As Railroads, Are On Trial*

Outcome of Present Test of Regulation and Private Management Will Have Important Effects on American Institutions

By Charles H. Markham
President of the Illinois Central Railroad

MR. PRESIDENT AND GENTLEMEN: We hear, everywhere, the statement that private ownership and operation of railroads is now being subjected to its final test. It is the talk of the street and of the press that the next few years will determine whether these great transportation agencies will remain under private ownership, or whether they will be taken over by the Government. The statement may be true; but it is only a partial statement of the truth. If it is the fact that private ownership of the railroads is being given its final trial, it is equally the fact that American institutions, which we have so highly cherished, are also on trial. A socialistic wave, high enough to nationalize the vast industrial life represented by the railroads, will not subside when fed with that result. Indeed, great as is the financial interest of the railroad owners and officers in the success of this branch of private management, failure, at this time, will mean more to you and every other citizen who believe in that principle of individualism which has carried our government to the foremost position in the world.

We are, therefore, engaged in a common effort; there can be no line of cleavage between the public users of the railroads and their owners and officers. There may have been too much inclination of these classes, in the past, to array themselves in hostile camps; but the time has come for an appreciation of the mutual duties and responsibilities that rest upon all, and for that cordial co-operation which is essential to the success of every great enterprise. The fact is that if the railroads fail, other lines of industry must go down. If the railroads succeed, it will be because they had your sincere and cordial support in securing and maintaining conditions essential to railroad existence.

It is safe to say that the American public is committed to the view that the transportation systems of the country, as well as the great body of our other industries, shall be in private hands depending for success upon private initiative. There is a feeling, among the saner people, that it is essential to cling to the ideals of the fathers, in so far as they teach us that the prosperity of America depends, not so much upon the functions of government, as upon the individual initiative, industry, enterprise and intelligence of the people themselves, left, as far as possible, unrestrained by the restrictive hand of government. Upon that principle we have prospered. If America is now the leading nation of the world, in the strength of its institutions, business, and views on public questions, it is due to the predominance of the ideal of individualism which has controlled the destinies of this nation from the beginning. We start, then, with the premise, that the vast majority of the American people prefer that the railroads of the country shall remain in private hands. Whether they continue to do so we believe will depend, in large measure, on whether shippers view success of the railroads as an unnecessary drain upon, or as an essential aid to, a prosperous business.

In stating the country is committed to a policy of private control, I do not mean without public regulation. We as a nation are committed to the view that railroading is so related to the public interest that reasonable regulation is es-

sential to protect the public against unjust and discriminatory rates and to secure the necessary service. The extent to which that regulation can wisely extend is an ever-recurring question. It may be overdone, as the history of its development in the United States suggests.

Development of Regulation

Prior to 1870 there was little or no public regulation. During the first century of our national life, we, as a people, were so interested in laying broad foundations, political, social, and economic; we were so concerned in redeeming waste places by the construction of lines of railroad; we were in such need of capital for the development of business enterprises, so wedded to the doctrine of individual effort, so intent upon justifying the theory that democratic ideals and principles should prevail—in short—so busy with our private affairs that there was little or no suggestion that it was necessary to lay the hand of government upon the agencies of transportation in a restrictive way. On the contrary, there was the belief that our government was largely a protest against autocratic and bureaucratic methods which had prevailed in the older civilizations; and the need of our rapidly developing country for improved transportation was so urgent that not only did the Government refrain from obstructive regulations, but, in this period, it sought to encourage the building of railroads by donations of land, by grants, of subsidies, and by the concession of special charter privileges. This was the period of perhaps the most venturesome railroad development, due largely to the faith in individual effort when unrestricted.

It was natural, perhaps, that abuses should develop in connection with the exercise of such unlimited power, and so it happened that beginning about 1870 there was a tendency on the part of the people to control, in some measure, the activities of public service corporations.

The early regulation was exclusively by the states, in some of which railroad commissions, with broad and, often, illy defined powers, were created; in others the Legislature itself directly regulated the rates and services. Each state considered its own needs, and embarrassing conflicts in regulation resulted. Congress entered the field in 1887 by the enactment of the Interstate Commerce Act—thus bringing in the national aspects of the problem. The original act, which continued with little change until 1906, was a conservative measure, under which the chief function of the commission was to investigate and report, whereby publicity was given to railroad operation and affairs. The commission could not prescribe maximum rates and was without effective machinery to enforce its orders. In consequence, its hands necessarily rested lightly on the railroads of the country.

The period from 1870 to 1906 may be characterized as one of scattered and conflicting state regulation, influenced but little by the original Interstate Commerce Act. The field of regulation, whether by Congress or the states, reached many angles of the railroad business, but the restrictions were not of a character to seriously weaken the spirit, enthusiasm, or initiative of private management, or destroy the confidence of capital in the safety of railroad investments. And it is well to remember that it was in the years prior to 1906 that

*An address delivered before the Transportation Club of Louisville, at Louisville, Ky., on April 28, 1920.

the greatest railroad development occurred; that capital sought investment in railroad securities; that railroads were extended into undeveloped territories far beyond the limit of present adequate returns; and that this occurred while there was regulation but of the milder kind.

Yet there were unwise profiteers in that period even as today. Rebates and gross discrimination—harmful both to the railroads and the public—were common, and, because of these evils, the public demanded more stringent regulations. In 1906 there came the Hepburn bill, by which the Interstate Commerce Commission became a powerful agency, vested with authority to prescribe maximum rates, to enforce its orders under heavy penalties, to require strict observance of the carriers' published tariffs, and endowed with many other powers with which you are familiar. These powers were further increased in 1910, when the commission was empowered, among other things, to suspend rates pending investigation and the burden was put upon the carriers to justify rates made.

But neither the Hepburn bill nor the amendments of 1910 in any way restricted the powers of the states over intrastate commerce, and so it followed that the state commissions, jealous of their authority, not only imitated the Interstate Commerce Commission's restrictive orders, but frequently strove to outdo that body in the regulation of a business, the success of which is so essential to all our business life.

The period 1906 to 1920 was one of increased regulation, both state and national, with increasing and more serious conflict between the different jurisdictions. Nor was the regulation accompanied by any attempt to protect the railroads. What was the result? Every business man knows that in that period the railroads of the country early began to lag; that new railroad construction dwindled to insignificance; that in some way or on some account capital lost a large part of its confidence; and that the old enthusiasm of the railroads' management waned. If any lesson is to be drawn from that period, it is that while there should be regulation curbing the evils which come from unrestricted railroad operation, yet that the railroad business, like any other, can be strangled to death—suffocated—by too much treatment.

Changes Made by Transportation Act

Now we come to the Transportation Act, 1920, which marks the beginning of a new period. It has more intensive regulation than any law previously enacted, but, for substantially the first time since 1870, it shows a trend to the belief of the earlier period that railroads need protection as well as regulation; it vests the Interstate Commerce Commission with vast powers; but imposes duties upon that body which, fairly, intelligently interpreted, will do much to up-build and maintain the great railroad industry. While all former regulatory laws passed by either state or national legislatures were critical, restrictive and restraining in their nature—designed to prevent the railroads from the exercise of some authority usually allowed to individuals in their private enterprises—the new Transportation Act is much calculated to encourage and strengthen the railroads. Heretofore the generally accepted theory of a business affected with a public interest has been that the public should have the benefit without sharing any of the responsibilities or burdens. In effect, the owners of the railroads have been told: "You must furnish all the moneys, take all the risks, be subject to all the demands of the public—however unjust and absurd—be without any guaranty or assurance of a fair return upon your property, except such as the courts may give in specific instances, while the public shall enjoy low Government-made rates over which you will have little control—the public assuming no responsibilities for the support and maintenance of the property."

But in three important respects the Transportation Act of 1920 recognizes the obligation resting upon the public to see

that these transportation agencies are permitted to operate under conditions which will tend to assure fair service and a fair return.

First, among these stand the provisions which undertake to insure to the railroads, by legislative fiat, a certain return upon the property devoted to the public service. While the standard established is perhaps less than heretofore recognized by the courts, this law, in terms, requires its recognition by the commission and should go far to end the hesitating practices and policies which have too much prevailed where discretion was allowed.

The second of these protective provisions is that which places upon the commission the responsibility of initiating a rate basis sufficient to yield what Congress conceives to be needed revenue. Heretofore the commission's only responsibility was to decide whether rates, initiated by the carriers, were excessive—the decision of which was approached in a critical spirit—without the duty of seeing to it that the rates were sufficient to provide the railroads with reasonable returns. Under that policy it was conceived to be the function of the commission to exercise the veto power upon the carrier's actions; while now its duty is to examine the entire situation and initiate a body of rates which, while not unduly oppressing the public, will, at the same time, conserve railroad revenues and insure a fair return. The statute, wisely, recognizes the fact that since the public insists upon a large measure of regulation, it shall assume the responsibility of establishing rates which will not unduly oppress those who have invested their money in these great railroad properties.

The third of these protective features is the machinery provided for the adjustment of labor disputes. Those provisions will benefit both the owners and employees of the roads. They provide an impartial court where both sides can be heard, and a decision made, which should satisfy all who seek a fair settlement of an honest controversy. The great majority of railroad workers are not only loyal to their respective companies, but patriotic and law-abiding, and, in the end, they will welcome the provisions of this law, whereby the fairness of this stand taken may be publicly determined. These provisions will tend to expose radicalism, and protect the honest, fairminded worker.

I have said that the Transportation Act centralizes in the Interstate Commerce Commission many powers previously exercised by state commissions. We have reached that stage in the history of public regulation when greater uniformity is required. It is so not only with the railroads, but with general business as well. Most important business houses reach out beyond state lines, so that regulations of the local authorities, which, in the earlier days, were wise and helpful, have now become impediments to the best interests of trade. Congress, therefore, wisely, so framed the Transportation Act as to vest in the Interstate Commerce Commission the final word on many questions heretofore decided by the states.

To illustrate; the present law recognizes the issuance of securities and vests control thereof in the Interstate Commerce Commission. Heretofore the states undertook the regulation of the issuance of stocks and bonds of an interstate railroad, so that it was necessary for a single railroad, contemplating such issues, to obtain the consent of many states, with resulting delays and the expenditure of exorbitant fees. The railroads welcome, and the public should be satisfied with, the final approval of a single, independent and competent tribunal.

Again, the law provides that new railroads cannot be constructed, or an extension of an existing line undertaken, or any part abandoned, without securing from the Interstate Commerce Commission a certificate of public convenience and necessity—powers previously exercised by state bodies. It requires no argument to show that a single state should not

be permitted to control so important a matter as the extension or abandonment of an interstate railroad.

The law empowers the Interstate Commerce Commission to require a railroad to equip itself with new facilities—a transfer of power previously asserted by state tribunals.

Other illustrations of this centralizing tendency may be cited—the power to fix minimum as well as maximum rates—the power to regulate consolidations—the power to permit pooling—the power to prevent state authorities from establishing rates that will unduly burden or discriminate against interstate commerce, and other similar powers, which, if granted at all, should be to a single, independent, competent tribunal, so that at least uniformity in regulation may prevail.

No experienced railroad man will deny the necessity for intelligent regulation; and since there must be regulation, the power therefor should be vested in a single strong commission whose jurisdiction will include the entire line of railroad. It is not only better because of the frequent changes in the personnel of the state commissions, and the lesser opportunities thereby giving them to study the problems, but more especially because not only here, as elsewhere, do too many cooks spoil the broth, but because of the necessity for uniformity in the regulation.

Some Objectionable Features of the Act

There is indeed much that will prove helpful in the Transportation Act, if properly administered; yet there are other parts which, in my belief, should have been omitted. I refer more particularly to those provisions which do not allow a railroad to retain all its earnings under fair and nondiscriminatory rates, and which empower the commission to require one railroad to allow another the use of its equipment and terminal facilities. If a railroad company, handling traffic for rates deemed just to the shipper, enlarges its facilities, or by competent management and energy so builds up its business that, without any increase of rates, a surplus is obtained, part of it, under the law, may be appropriated to other uses. If a company, having regard to the interest of the shippers along its line, adds to its equipment and power, that equipment, at the will of the commission, may be appropriated to the use of other companies which have, perhaps, less foresight or disposition to so provide for their respective lines. If a company, looking to the future, increases its terminals, they may be appropriated by the commission to the use of others possessed of less foresight, or perhaps wilfully disposed to appropriate the advantages of others.

It may be that such provisions will tend to the advantage of the poorly served communities of the country, but they tend more to destroy, in the competently managed and provident companies, that effort and competency, which, after all, are the most essential things in railroad management. There is in the railroad business, as in every other, an inducement to effort, to accommodate, to give increased facilities, to provide new and adequate service, when that effort will result in greater reward. It is impossible for me to believe that the public is ever so well served, when the giver of the service is not to have the fruits thereof; nor can I believe the principle wise which tends to protect the inefficient, at the cost of the efficient; on the contrary, the old adage, "Toil or ye perish," should apply to the railroad business as to every other and, when applied to all, will more surely build up the railroads as a whole and give broader and better transportation facilities than can any system that takes from the well and efficiently managed and gives to the incompetent.

But, after all, success or failure under the new Transportation Act is largely dependent upon its administration by the Interstate Commerce Commission. While the law contains much for encouragement, and, if administered in the

spirit of its enactment, will place the railroads of the country upon a permanently sound foundation; yet success or failure depends upon the commission to which are given vast administrative powers. The eleven men who will compose the commission are vested with power in the industrial field greater than that exercised by any other body of men in the world. Men of narrow views, of limited experience, controlled by a temperamental inclination to prejudgment, who have not grasped the full significance of the railroad problem, or do not appreciate the necessity for stimulating and building up railroad credit, who cannot, in a measure, forget the past, and look to the future, have no place upon that great tribunal.

But however competent and fairly disposed the commission may be, it is only human nature to feel the influence of public sentiment, in the making of which the business men will have chief part; and so it depends upon you whether the commission adopt toward the railroad problem a broad, wise, and efficient policy that will upbuild, or a critical, narrow, and starving course which will destroy. If the private management of railroads, and the fundamental principles therein represented, are to continue, you must join in the effort to frame a policy—a sentiment—of success.

The rate problem is one of those requiring immediate consideration. During the period preceding the return of the railroads, it was urged that their return meant the imposition of a heavy burden on the public by increased rates. It is true that rates must be increased. Indeed, private operation of the railroads must fail unless there is a generous concession of adequate rates for the services given. Congress, in the new law, recognized the fact, and fixed a standard of return; but that law must be interpreted and given effect, and, whether of benefit or not, will depend upon the manner of its execution. If the commission applies the law grudgingly to the railroads, pausing to consider whether this or that halfway measure will suffice, disaster must follow.

Why Rates Must Go Up

And why should there be hesitation? Statistics show that the wages of railroad employees have increased since 1915 on the average of more than 100 per cent—a conservative estimate. Other items of expense have kept pace. Coal, ties, rail, cars, locomotives, and all supplies now cost not only much more, but in many cases three or four times as much as five or six years ago. The economic laws, which apply to the management of the railroad business, are no different from those which govern the successful operation of other lines of endeavor. Five and five makes ten; equals added to unequals produce unequals, in the railroad business, just as in every other; and when the expenses far outstrip the revenues, the latter must be increased if bankruptcy is to be avoided.

And, broadly speaking, in this period of high wages and prices, can it be reasonably expected that in this, the most important business of all, any other principle shall apply, or any other different courses be followed, than that practiced in every other successful business in the United States? It should be recognized as a necessary detail of the period—just as, following the Civil War, when high prices prevailed, passenger and freight rates were in like proportion. It is a detail so in accord with sound business methods that argument should not be required for its endorsement by men of business who want to avoid the socialistic tendencies of the day—tendencies whose greatest, most far-reaching victory, in this country, would be the nationalization of the railroads.

The railroad companies have before them a tremendous task, and perhaps the future of not only their own but of all private industry is dependent upon the result. They must make up the lost ground; they must better their terminals; add to their equipment; give improved service; while, at the

same time, an ever-increasing traffic must be accommodated. Whether this great work will be successfully done depends, in no small degree, upon the cheerfulness with which the shipping public meet the not unreasonable demand for increased charges for transportation.

The effect of railroad failure should not be underestimated. This is an age of radical agitation. It strikes hardest and first at the lines of private business having public duties to perform. In the beginning, it proceeds by varying degrees of regulation, but in the end it takes the property for the use of the public—and the right to the benefit of individual effort grows less and less. Until two years ago the railroad business was privately managed, and so successfully that better service at lower rates was given than in any other country on the globe. When the government took over the railroads it is safe to say that the great majority of railroad employees were averse to government ownership. As a result of two years of government control the leaders of organized labor not only opposed the return of the roads to their owners but made demands, not only for their retention by the government, but under conditions which would make the employees the virtual managers and beneficiaries. When you stop to think of it, it is traveling a long way in a short time. At the increased speed which, with any success, all such movements require, how long would it take, following government ownership of the railroads, to nationalize the coal mines, the milling interests, the distribution of food and, finally, the resumption of the title to the land? Unless you favor these things ultimately, and look forward to the day of the soviet government, you will oppose not only every suggestion of government operation of railroads but every degree of regulation that does not encourage the full development of the essence of private management.

Duties of Railway Managements

I have referred to the duties of the Interstate Commerce Commission and to the responsibility of the public in the solution of the railroad problem, but I would not be candid if I in any degree minimized the heavy duty resting upon the officers and managers of these railroads. They owe to the public an obligation to administer their properties with an eye single to the public service. They face a new era in railroad regulation and development. There can be no standing still. The railroads must be equipped to handle a traffic many times as great as that now handled. Terminals must be enlarged, equipment doubled and trebled, greater results obtained from the tools at hand. Railroad management must become increasingly competent. There must be more cars handled through the terminals—greater average movement of cars—more prompt loading and unloading. The watchword of the railroad managers must be "efficiency," and to acquire that "efficiency" there must be not only thorough, expert study of the railroad situation but a sympathetic understanding of the public needs and a willingness to co-operate with the shippers in their solution. The railroad man who will not consecrate himself to the accomplishment of these duties cannot last.

Yet in this transitional period too much must not be expected. As you know, constructive work proceeds more slowly than destructive work. To use a homely and familiar expression, it will take longer to unscramble than it took to scramble these properties. The railroads cannot enlarge their equipment in the twinkling of an eye; they cannot rid themselves of practices found unscientific by the mere issuance of a word of command; and there are the added, peculiar difficulties resulting from the present disturbed economic conditions of the world. It will take time; and so I bespeak for those who are engaged in an honest effort to do constructive work in the railroad field your patient tolerance of many things which should be corrected and your hopeful trust in our deter-

mination to improve conditions. There will be errors of judgment, but in the end, under the influence of enlightened public opinion, the law will be fairly administered and the rights of private business prevail.

But after all is said and done the result will depend upon the good sense, patience and patriotism of the American people. Private management may be on trial. If the system fails it will be because the American people have deliberately determined to cast away from the traditional moorings of the past—to embark on the uncharted sea of a socialized system—to abandon the principles of our fathers—to bid farewell to the old faith in the development of the individual.

The Weekly Rest Day

"THE TRAIN DESPATCHER," the monthly magazine of the Train Despatchers' Association, having learned that two chief despatchers "on a large continental railroad" had, at their own request, been authorized by the company to work seven days each week, prints an editorial protesting against this violation of the spirit of the recently adopted rule that despatchers should work only six days a week. The substance of the editorial follows:

Any encroachment on the enforcement of the one day of rest each week must be looked upon as a threatening and dangerous entering wedge. This is a dangerous precedent, not only to the railroads but to the train despatchers. The absolute necessity of a day of rest each week is recognized everywhere. The social, physical, spiritual and moral welfare of train despatchers and their families demand that the one day of rest each week be strictly adhered to. In the interest of safer transportation, higher living standards, a longer life for employees and a superior esprit d'corps train despatchers should seek to uphold in every way the full spirit and intent of the award made by the United States Railroad Administration on July 25, 1919, viz.: "Chief, assistant chief, regular trick and regular relief despatchers (and extra despatchers who perform six days' despatching service in one week), will be allowed and required to take one day off per week, unless prevented by the requirements of the service, in which case extra compensation will be allowed pro rata in lieu of the day off."

The welfare of the whole profession should be taken into consideration and the selfish interest of a few men should not be allowed to jeopardize the very best interests of thousands of their fellow workers. For any man—particularly a man who has a good job—this is a short-sighted policy. It is true that there may be a few more dollars in their envelopes each month, but there is a loss, a distinct loss in their moral, physical and spiritual development that is not compensated for. A despatcher who works seven days every week is burning the candle of life at both ends. The sum total of his life's earning capacity is actually less than if he took his rest days. * * *

A vigorous protest will be made to the officials of this railroad. To give in to this situation would be a tacit endorsement of it and a direct denial of one of the cardinal principles of the American Train Despatchers' Association. We must show the truth of our contention that we were not asking for a day of rest each week as an indirect method of obtaining an increase of pay.

Every man is entitled to a sufficient wage from six days of work each week to support his family and meet all his needs and something besides. * * * To give way to any encroachment on the one day of rest each week would be a direct violation of our most essential principle and motto. The honor of this Association will not permit this violation of its constitution. Such weakness would return to plague us in our future actions.

Hearing on General Rate Advance Case

Railroad Witnesses Cross-Examined as to Details of Financial Showing and Rate Adjustments

WASHINGTON, D. C.

THE hearings before the Interstate Commerce Commission on the applications of the railroads for a general advance in freight rates were resumed on Monday, June 7, after a recess since May 28 and the first three days were devoted to a more or less desultory cross-examination of the railroad witnesses who had previously testified and to the presentation of additional statistical information called for by the commission and by the shippers at the close of the previous session.

The marked change in the character of the opposition to the railroads which has been evident since those hearings were started was emphasized when it was announced that Clifford Thorne, who had been selected to conduct the chief cross-examination on behalf of the representatives of the shippers on questions pertaining to valuation and general statistical matters, would not be present and that it had been decided to waive most of the cross-examination of this character. No reason for his absence was stated, but W. E. Lamb, of Chicago, who made the announcement on behalf of a committee of attorneys for shippers, said that it seemed to be the general view that the series of inquiries propounded by the commission had made unnecessary anything like an extended cross-examination on those questions and that the commission itself was much more representative of the public than the shippers' representatives and better able to analyze the replies to be submitted by the railroads.

Mr. Lamb said, however, that his committee desired to ask two questions and that if the carriers would concede the points involved further questioning would be unnecessary. One of these was whether the property investment accounts submitted include stocks and bonds put into those accounts at par prior to 1907 and if so what was the actual realization from the securities. The second was as to whether any deduction had been made from the property investment figures for accrued depreciation. R. V. Fletcher, for the southern roads, said the carriers would concede that no deduction had been made on account of the accrued depreciation reserves either for equipment or for road, and later Alfred P. Thom, counsel for the Association of Railway Executives, said the carriers would concede that the accounts do include some stocks and bonds put into the accounts at par prior to 1907 and that the exhibits do not purport to show the amount of money realized therefrom.

It appeared, however, that several attorneys for shippers desired to reserve the right to cross-examine certain of the railroad witnesses on financial testimony as well as on the traffic testimony, in which they were particularly interested, after the additional information which had been promised for Tuesday, had been submitted. S. H. Cowan of Texas said he wanted to make some further inquiries as to how the railroads had made up their figures for the constructive year ended October 31, 1919, by adjustment for the increases in the level of expenses which occurred during that year and later; and C. E. Cotterill, for the Southern Traffic League, said he had had no part in the conferences of the shippers' committee represented by Mr. Lamb and that he was prepared to cross-examine the witnesses for the Southern Lines.

J. E. Benton, solicitor for the National Association of Railway & Utilities Commissioners, said he thought there would be little cross-examination of the statistical witnesses on behalf of the states except of T. W. Hulme, vice-chairman of the President's Conference Committee on Valuation, who had presented a compilation comparing the property investment

accounts of 50 roads with the cost of reproduction plus land value as shown in preliminary reports of the Bureau of Valuation. Mr. Benton took up a large part of the day with his questioning of Mr. Hulme on questions pertaining to valuation and property investment accounts, apparently trying to induce the witness to claim something that might be more vulnerable than his original testimony, which was reported in last week's issue. Mr. Hulme readily admitted the most notorious defects of the individual property investment accounts of some of the roads, which have been disclosed by investigations by the commission, but pointed out that the commission's investigations had also disclosed many instances of property not included or understated in the accounts. While he adhered to his expression of opinion that the cost of reproduction new plus land as found by the commission would considerably exceed the amount of the property investment accounts, he insisted that he had not made any claims or attempted to testify as to the value of the railroads, and that he had not used any theory of his own; but had merely compared the property investment accounts with certain facts found by the valuation bureau. He said that when he used the word "considerably" he meant that the excess of the cost of reproduction figures plus land values as of 1914 over the book accounts would be from 10 to 15 per cent for the country as a whole and over 30 per cent for the eastern roads.

Asked if only a small excess over the book accounts would not indicate that they had been improperly kept, in view of the large increase in prices over the original cost, Mr. Hulme said that Director Prouty had stated that the 1914 prices were fairly representative of the costs for 20 years back and that the costs as reported by the bureau do not reflect prices materially above the original cost.

Mr. Benton asked why land grants had been included in the figures, to which Mr. Hulme replied that the commission's reports included property found regardless of the source and that it was also his personal opinion that it should be included; but that land represents only about 10 per cent of the total figures for the 50 roads he had used and only about 12 per cent for all roads. Mr. Thom interrupted after several questions pertaining to land grants to ask Mr. Benton if he claimed that a railroad does not own property that has been given it. Mr. Benton said he was not interested in an argument at that time.

When Mr. Benton referred to several cases investigated by the commission where alleged improper entries had been made in the property accounts Mr. Hulme said that on the other hand many roads have written into their accounts property taken over from other companies at far less than the original cost. He mentioned that the Lake Shore & Michigan Southern had been taken into the New York Central accounts at the figure at which it stood on the Lake Shore books, which was far below the cost to the New York Central.

Asked why he had made no deduction for depreciation, Mr. Hulme said he had not undertaken to go beyond what the valuation bureau had reported.

Mr. Benton also asked numerous questions as to the amount of property paid for out of earnings and asked for an exhibit on that subject as complete as it is possible to make it; but was told that not even a reasonable estimate could be made in the time available.

Mr. Benton also mentioned several railroads as in the class of those whose construction had not been justified and asked

if their cost should be included in the aggregate value on which the railroads as a whole are asking a return. Mr. Hulme said that if there was no justification for the building of a road it should not be included but that in view of the present demand for transportation facilities he knew of no such road. In reply to questions, he said that individual property investment accounts include property bought for transportation purposes but not yet used, but that he had omitted \$18,000,000 of such items as debatable in making up his comparison. He also admitted that the property investment account of the Mobile & Ohio includes some property destroyed during the Civil War.

Finally Mr. Benton asked whether, in view of the special facts such as the high level of prices and the cost of living resulting from the war, the commission might not give less weight to cost of reproduction figures in this case than in the ordinary case. Mr. Hulme replied that the decreased purchasing power of the dollar should be taken into consideration in the case of the railroads as well as in other matters and that on an equated basis the same weight should be given to the cost of reproduction factors as in 1914. If the railroad dollar had been treated on the same basis as other dollars, he said, the present application for a rate advance would not have been necessary.

In reply to a question by J. S. Burchmore, Mr. Hulme said the property around the New York Central and Pennsylvania terminals in New York devoted to office buildings and hotels was not carried in the railroad property accounts but in the accounts of separate real estate companies.

Glenn E. Plumb asked Mr. Hulme several questions as to the amount of railroad lands acquired by eminent domain, or under grants which, according to Mr. Plumb's theory, limit the railroad's interest in its land, etc. Mr. Hulme said he had made no study of the matter.

M. P. Blauvelt, vice-president of the Illinois Central, who had presented the statistical testimony for the southern lines, followed Mr. Hulme and was cross-examined by C. E. Cotterill and other representatives of the shippers.

Mr. Blauvelt's cross-examination was devoted mainly to an effort to show that the carriers' exhibits made too unfavorable a showing because there had been charged into the accounts for the constructive year all items of increased expense while the shippers' representatives seemed to think that insufficient allowance had been made on the revenue side for increases in rates which became effective during the latter part of the year or about January 1, or for increases in traffic. Mr. Blauvelt said that the instructions to the roads had been to include the revenue on a yearly basis for all important rate increases which became effective before January 1 and when it was shown that nothing had been added for the principal roads he said it must be because the amounts were found inconsequential. He thought an item of \$100,000 for the Illinois Central might be considered too small to make an adjustment for, but Mr. Cotterill said that adjustments as small as \$95 had been made on the expense side.

The inclusion in the January accounts of an estimate of the amount of back mail pay back to November 1, 1916, due from the postoffice department, caused a great deal of confusion in the minds of the shippers' attorneys. There was an item of about \$8,500,000 for the Southern lines and Mr. Cotterill insisted that this should be treated as a source of increased revenue for 1920, but Mr. Blauvelt, with the assistance of two or three lawyers, explained that most of this belonged to the director general back of March 1 and that only \$3,600,000 would accrue to the Southern lines for 1920. He said that a line was clearly drawn between the accounts after February 29 and that all of the cash was impounded by the director general while cash received since for transactions before that date were placed to his credit.

J. Van Norman, of Louisville, also got mixed up on the

back mail pay when he produced a statement showing that the net operating income for the Southern lines in January and February had increased \$12,000,000 over 1919, or 149 per cent, but it was later shown that the increase in mail revenue reported in the same statement had been nearly \$11,000,000 or 764 per cent.

Mr. Cotterill said that on the basis of the adjusted year the Southern Railway would have earned only \$6,000,000 net, whereas it had earned that much in four months of this year. Mr. Blauvelt showed that this included about \$2,500,000 of back mail pay, and that traffic had so far this year shown an increase, but that no effort had been made in compiling the figures for the constructive year to speculate on an increase in traffic in 1920. He said March had been a good month for the Illinois Central and April had been better than April, 1919, although still showing a deficit. When Mr. Cotterill confidently predicted a continued improvement in traffic, Mr. Blauvelt remarked that his prediction would not buy anything.

When Mr. Cotterill asked whether any allowance had been made for any increased revenue the roads might receive from the increase in Pullman fares, Mr. Blauvelt replied that the question of contracts between the roads and the Pullman Company is still unsettled. Under the old contracts that existed prior to federal control some roads would share in the increase in Pullman revenues, but a new arrangement was made during federal control, which the Pullman Company wants to abrogate.

Mr. Cotterill asked about a rumor that many southern roads had increased the salaries of their executive officers, but Mr. Blauvelt said he had not heard of it.

C. R. Capps, vice-president of the Seaboard Air Line and the traffic witness for the southern lines, was questioned at length about the proposed adjustment of rates, particularly inter-territorial rates. J. Van Norman asked questions indicating opposition to percentage advances on the ground that they would disturb relationships. Commissioner Daniels asked why, since the purchasing power of money has been changed, the differentials should not be changed by the same percentage as the rates. Mr. Norman said it was not practical, but Frank Lyon, also representing shippers, took the position that long-haul rates should bear their share of the increase in expenses on the same percentage basis as short-haul rates.

As to the effect of increases in rates during the latter part of the year, Mr. Capps said that 88 per cent of the freight-rate authorities issued had been reductions, but that he was unable to say to what extent the importance of the increases outweighed the reductions in the effect on revenues. When Commissioner Aitchison asked if he had not noticed an unusual activity in increasing rates during the month preceding the termination of federal control Mr. Capps said he had not been in a position to notice anything of the kind at that time.

At the opening of the session on Tuesday morning F. H. Wood filed the answers of the carriers to the series of 13 questions propounded by the commission on May 28, calling for additional statistical information and for a statement as to how it is proposed to treat inter-territorial rates. As to two or three of the questions, it was explained that the carriers had not yet succeeded in obtaining the information so far. The reports of operating results for March and April were in a confused state because of complications in the accounts arising from the termination of federal control and it had so far been found impossible to ascertain the number of passenger miles of travel in Pullman cars, which the commission had asked for for the purpose of considering the advisability of a surtax.

Mr. Wood also filed by request a petition of the Chesapeake Bay lines and the coastwise lines operating between Atlantic ports and between Atlantic and gulf ports for

increases in rates on the same basis as the increases in rail rates.

The Mississippi-Warrior river inland waterway service, operated by the War Department, has also filed a request for an increase in joint rates by the same percentage as is applied to the rail lines.

Inter-Territorial Rates

In reply to the commission's question as to the methods proposed for increasing Inter-Territorial Joint Rates, a statement was filed in part as follows:

PROPOSED METHOD OF INCREASING INTER-TERRITORIAL JOINT RATES Between

Official Classification Territory East of the Indiana-Illinois State Line and the Chicago Switching District

- | | Basis of Advance |
|--|--|
| (1) Duluth, St. Paul, Minneapolis, Winona and points taking same rates; also Upper Peninsula of Michigan and Wisconsin.
(Note: Rates governed by Official Classification.) | 30 per cent. |
| (2) Western territory west of the Mississippi river, except Pacific Coast, Inter-Mountain and Southwestern territories (see note).
(Note: Pacific Coast and Inter-Mountain territories include territory west of El Paso, Tex.; Albuquerque, Belen, N. M.; Provo, Salt Lake City, Ogden, Utah; Kuna, Ida., and points west of Idaho-Montana State Line. Southwestern territory includes Arkansas, Oklahoma and Texas and points in Louisiana west of the Mississippi river. Tariffs involved to be promptly reissued or supplemented so as to show specific increased rates.) | 30 per cent east of junctions between C. F. A. lines and Western lines and 24 per cent west thereof. |
| (3) Points in Illinois, including west bank of Mississippi river points taking rates governed by the Official Classification. | 30 per cent. |
| (4) Pacific Coast and Inter-Mountain territories, including Pacific Coast territory in Canada. | 25½ per cent. |

Between
All Points in Official Classification Territory, Including Points in Illinois, Wisconsin, St. Paul, Duluth, Winona, and Points Taking Same Rates; Also Mississippi River Pro-rating Points

- | | Basis of Advance |
|--|------------------|
| (5) Southern Classification territory, via all-rail, rail-and-water, and rail-water-and-rail routes. | 31 per cent. |
| (6) Eastern Canadian points, including Maritime provinces. | 30 per cent. |
| Pacific Coast, U. S. Points and Points in Inter-Mountain Territory | |
| (7) Eastern Canadian points | 25½ per cent. |

- | | Basis of Advance |
|-----------------------------|------------------|
| (8) Western Canadian points | 24 per cent. |

EXPORT AND IMPORT RATES VIA PACIFIC COAST

Rates made to equalize the rail and ocean rates via the North Atlantic ports to be advanced the same amounts in cents per 100 lb. as the base point rate to and from North Atlantic Coast ports is advanced.

RATES ON BITUMINOUS COAL FROM ILLINOIS AND INDIANA MINES

Rates on bituminous coal from Illinois and Indiana mines to be advanced 27 per cent to all points in Illinois territory and Wisconsin, including St. Paul and Minneapolis; to all points west of the above territory, 24 per cent.

Differentials to be adjusted upon receipt of decision of commission in the so-called Illinois Differential Case now before the commission.

ILLINOIS CLASS AND COMMODITY RATES

Between points in Illinois territory, advance rates, viz.:

Rates governed by Official Classification, 30 per cent

Rates governed by Western Classification, 24 per cent

with understanding that carriers will as soon as possible submit proposition to establish so-called Disque scale which will represent advance of 30 per cent in present Central Freight Association territory scale and be extended to 10 classes governed by Western Classification and exceptions thereto to apply throughout Illinois territory.

INTER-TERRITORIAL RATES TO AND FROM SOUTHWESTERN TERRITORY

The Official and Southern Classification territory lines propose the following:

Rates between Points in Official Classification Territory (East of Illinois-Indiana State Line) and points in the Southwest, namely, points in Arkansas, Oklahoma, Texas and Louisiana west of the Mississippi River.

- (A) That these rates be increased in amounts which will approximately give to Official Classification lines an increase of 30 per cent in their present revenue to and from Ohio and Mississippi river crossings and Chicago and the Southwestern lines an increase in their revenue of 24 per cent.

Where inter-territorial joint through rates have been heretofore published on the combination of intermediate rates to and from the Ohio and Mississippi river crossings such combination rates shall be promptly revised to reflect the increase in each factor.

Rates between Points in Southern Classification Territory and points in the Southwestern Territory, namely, Arkansas, Oklahoma, Texas and Louisiana west of the Mississippi River.

- (B) That these rates be increased 31 per cent.

(C) Packing House Products, Fresh Meats, Dressed Poultry, Hides, Tallow and Fertilizer Carloads from Western Territory to Southern Territory.

That rates or bases for rates on above commodities from producing points in Western trunk line and Southwestern territories to Southern Classification territory be increased 31 per cent.

(D) Export and Import Rates to and from Texas Gulf Ports.

That rates on this traffic be increased to preserve present relationship with rates to and from New Orleans.

- (E) Inter- and Intra-territorial Rates on Commodities.
Rates on Commodities originating at Mississippi River crossings and points west thereof in Southern Missouri, Arkansas, Louisiana (west of the Mississippi River), Oklahoma and Texas which are related to those applying on the same commodities from Mississippi Valley territory.

That these rates to all territories except Pacific Coast and Inter-Mountain be increased 31 per cent. The commodities are as follows:

Sugar.
Molasses.
Rice and rice products.
Lumber and forest products.
Vegetable oils.
Vegetable oil cake, meal and hulls.
Naval stores.
Cotton and cotton linters.
Fruits, melons and vegetables.
Also Tropical fruits, sisal, coffee, asphalt, from Texas Gulf ports.

(F) Rates between Mississippi River Crossings.

The rates via all lines on classes and commodities between Mississippi River crossings south of Cairo and points grouped therewith (on the one hand) and Mississippi River points, Cairo and north to and including St. Paul, Minn., and points grouped therewith, and points east thereof in Illinois and Wisconsin (on the other hand) to be increased 31 per cent.

(G) Rates from Missouri River Points to Lower Mississippi River Points.

Rates from Missouri River points and points grouped therewith to Mississippi River crossings, Helena, Ark., and south, and points grouped therewith, when governed by the Southern Classification, to be increased 31 per cent.

Rates referred to in above paragraphs "A" to "G," inclusive, to be published in specific form where the increases cannot be handled by the blanket or percentage supplement.

RATES (EXCEPT ON GRAIN AND GRAIN PRODUCTS FROM POINTS NORTH OF THE OHIO RIVER AND NORTH OF THE STATES OF ARKANSAS, OKLAHOMA AND TEXAS)

- | Between Southern Classification Territory and | Increase |
|--|---------------|
| Canadian territory, not including Pacific Coast and Inter-Mountain territories. | 31 per cent. |
| Western territory, except as otherwise provided (rates to be promptly revised to not exceed combination of rates increased 31 per cent east and 24 per cent west.) | 31 per cent. |
| Pacific Coast and Inter-Mountain territory, including Pacific Coast points in Canada. | 25½ per cent. |

EXPORT RATES (EXCEPT GRAIN AND GRAIN PRODUCTS FROM ILLINOIS AND WESTERN TRUNK LINE TERRITORY TO GULF PORTS)

From C. F. A., Illinois and Western Trunk Line territories to Gulf and South Atlantic ports published by Agents Boyd and Speiden to be advanced 30 per cent.

- | COAL AND COKE—CARLOAD | Increase |
|--|---|
| From Southwest Virginia—Eastern Kentucky and Eastern Tennessee district to points north of the Ohio and points west of the Mississippi Rivers. | Same amount as from C. & O. Kanawha District. |
| From Western Kentucky to points north of the Ohio River and to points west of the Mississippi River. | Same amount as from Southern Illinois mines. |
| From Western Virginia to Carolina territory and the South. | Same percentage as from Virginia mines. |
| From Illinois mines to Southern territory..... | Same percentage as from West. Ky. mines. |
| From Virginia and Tennessee mines to South Atlantic ports for export and coastwise and where export and coastwise rates are published. | Same amount as from W. Va. mines to Hampton Roads ports applying outside the Capes. |

COMBINATION RATES

The so-called combination tariffs, issued by Agents Morris and Speiden (Morris' I. C. C. U. S. 1 and Speiden's tariff 44A) should be cancelled. Also that all rules in other tariffs providing for single advances on certain commodities, where no through rates are in effect and charges are the combination of rates, be eliminated.

Where it is the custom to carry general traffic on joint through rates, it is the purpose of the carriers to establish joint or proportional rates on commodities provided for in the combination tariff above referred to in instances where there is a regular movement of such commodities.

Under this assurance joint through rates, or proportional rates, will be established at once on lumber and articles taking lumber rates from Pacific Coast and intermediate producing points to points in Central Freight Association territory, also from Southwestern producing points where joint tariffs are not now in effect.

MINIMUM CLASS SCALES

The percentage of increase in the respective territories should be applied to the minimum class scale in such territories. Any provisions now published, to the effect that the minimum class scale will apply to combination rates, to be cancelled allowing the minimum class scale to apply to each factor where joint through rates are not in effect.

Any provisions now shown in tariffs, making the minimum class scale subject to exceptions to the governing classification, to be cancelled, the intention being that the minimum class scale of the governing classification should be the minimum to be charged on any shipment carried at class rates.

MINIMUM PER CAR CHARGE AND PER SINGLE SHIPMENT CHARGE

The minimum charge of \$15.00 per car and the final minimum shipment charge of 50 cents per single shipment to be increased in all territories, 30 per cent.

The present provision under the consolidated classification and in various tariffs to the effect that the minimum carload charges or the minimum charge per shipment would apply only once, when shipments are handled

on combination rates in the absence of joint through rates, to be cancelled allowing the minimum charge to apply to each factor.

GRAIN RATES

Western Trunk Line Territory

The rates on grain between points in the Western Trunk Line territory, other than Illinois, to be increased 24 per cent. This will include rates to Chicago, Milwaukee, Peoria, St. Louis, Minneapolis, Duluth, and Missouri River Points, etc.

Between points in Illinois and East St. Louis and St. Louis rates to be increased 30 per cent; between points in Illinois and Cairo where heretofore equalized through East St. Louis or St. Louis rates to be made $3\frac{1}{2}$ cents higher than to East St. Louis or St. Louis; between other Illinois points and Cairo rates to be increased 30 per cent; between all other points in Illinois, 30 per cent.

Between points in Illinois and Milwaukee and Southern Wisconsin intermediate thereto 30 per cent.

Inter-territorial Rates

From points in Illinois to New Orleans, Memphis and Mississippi River points south of Memphis, rates to be made on combination through St. Louis, the combination through Cairo equalizing. Exception: Rates from points in extreme southern portion of Illinois will be based on Cairo.

To Louisville from Central and Northern Illinois, rates to be made 3 cents higher than to Cairo, which will equalize to Southeast against Cairo. From Chicago and Peoria reshipping rates to Memphis and Mississippi River points south to New Orleans inclusive, to be increased so as to equalize on grain from Minneapolis as against routes through St. Louis.

From Missouri River points north of St. Joseph, Mo.; from Minneapolis, Duluth and from interior points in Iowa, Minnesota, South Dakota, Wisconsin and Northern Missouri to Cairo, Memphis, New Orleans, and Mississippi River points south of Memphis rates via all routes to be made on the combination through St. Louis, which is the present basis.

From Missouri River points, St. Joseph, Mo., and south to Memphis, New Orleans and Mississippi River points south of Memphis also to Cairo on shipments to the southeast, rates to be made one cent per 100 pound under Omaha, which is the present basis.

From points west of the Missouri River (Kansas, Nebraska, Colorado) to New Orleans, Memphis, and Mississippi River points south of Memphis, rates to be made on the combination to and from the Missouri River, except from points now taking a basic difference under the Missouri River combination; from such points the present difference will be continued.

From Missouri River points to Arkansas and Louisiana rates to be increased 24 per cent.

From points west of the Missouri River, Kansas, Nebraska and Colorado to Arkansas and Louisiana rates to be made the same difference under the combination to and from the Missouri River as of today.

From points east of the Missouri River to Arkansas and Louisiana, rates to be made the combination on Kansas City or St. Louis gateways.

From St. Louis and Cairo, also Memphis to Arkansas and Louisiana, rates to be increased 24 per cent.

Rates on export grain from Missouri River and St. Louis to Galveston and other Texas ports to be made in the same relation with New Orleans as today.

From Minneapolis and common points to Atlantic Seaboard the through rates now published via northern routes through Mackinac, Sault Ste. Marie and other northern gateways to be increased so as not to be less than the combination of rates from Minneapolis to Chicago and Chicago to the Eastern Trunk Line territory.

GRAIN PRODUCT RATES

The increased rates on grain to apply to grain products and articles related therewith now taking grain rates.

From Ohio River Crossings and Memphis to the South

From Cairo and Ohio River crossings east thereof to southeast, advance 31 per cent.

From Memphis to Southeast, make $6\frac{1}{2}$ cents less than from Cairo.

*Proportional rates from Louisville to Southeast, 3 cents less than from Louisville proper.

*Proportional rates from Cincinnati to Southeast, same proportional rates as from Louisville.

*These rates to have the same application as to territory of origin as the present proportional rates.

From Cairo and Ohio River crossings east thereof to Mississippi Valley reshipping and local rates, advance 31 per cent.

From Memphis to Mississippi Valley reshipping rates, make $6\frac{1}{2}$ cents under Cairo reshipping rates.

From Memphis to Mississippi Valley local rates, advance 31 per cent.

In response to inquiry No. 12, as announced by the commission, it was announced that the carriers in Official and Western Classification territories propose to apply the respective group percentages of increases in rates to all switching rates or charges, except that at junction points between carriers in Official and Western Classification territories the increase will be 30 per cent. The carriers in Southern Classification territory propose to increase all switching rates of all purely switching and terminal roads, and the intra-plant, intra-terminal and inter-terminal switching rates of other carriers 31 per cent.

The Southwestern lines, that are asking an increase of 32.8 per cent, also filed a statement of their proposed method of treating Inter-Territorial Rates.

Mr. Capps was followed by L. E. Wettling, statistician for the western roads. S. H. Cowan asked several questions as to why the railroads had based their exhibits on the adjusted year ending October 31, 1919, instead of on an actual year or upon recent months. Mr. Wettling explained that they had also filed the later statistics but that they had made up the adjusted statistics because they could no longer operate under the conditions that existed during the early

part of 1919 and had, therefore, allowed for known increases in expenses, but had made no attempt at prophecy as to the conditions of 1920. When Mr. Cowan asked if the traffic delayed by the congestion would not result in future increases, Commissioner Aitchison interrupted to ask if the attempts to clear up the congestion would not result in somewhat wasteful operation such as an increase in empty-car mileage. Mr. Wettling replied that that had been the experience of the Railroad Administration when it had similar conditions to deal with.

Ralph Merriam, of Chicago, asked whether the increase in maintenance-of-way expenditures for the western roads reflected increases in quantities of rails, ties and ballast, or increases in prices and wages. Mr. Wettling said that studies made by many western roads indicate that if the same quantities had been used as in a comparative previous period maintenance of way would have cost \$380,000,000 instead of \$324,000,000. He said they showed less rails, ties and ballast used in 1919.

C. E. Elmquist brought out that if the Southwestern lines are allowed the advance of 32.8 per cent they have asked, the other western lines would need only about 22.5 per cent, and asked how much the transcontinental lines, treated separately, would need. Mr. Wettling had not the figure and Mr. Elmquist suggested 10 per cent. Mr. Wettling thought it might be a little higher but admitted that if 24 per cent is given the western roads as a whole the transcontinental lines would receive more than they need to make 6 per cent. Mr. Elmquist also asked why no allowance had been made for the abnormal conditions of 1919 and for increases in efficiency and in traffic in 1920. Mr. Wettling said there had never been a perfectly normal year and that there was no guaranty that the abnormal conditions of 1919 or something similar will not occur again.

Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe and the traffic witness for the western roads, was questioned on Wednesday afternoon by C. E. Elmquist and other representatives of the shippers. Mr. Elmquist asked if a very large part of the traffic of 1918 and 1919 was not government traffic which was handled at land grant rates and if the railroad figures as to results for 1919 would not be erroneous to the extent of the reduction. Mr. Chambers said that land grant rates were paid on such traffic just the same as under private operation and that roads in competition with land grant roads received the same rates as the land grant roads, but he did not admit that the land grant factor rendered the exhibits erroneous. Mr. Elmquist pointed out that the Railroad Administration in increasing rates had used specific advances or at least specific maximums in increasing long haul rates on lumber, grain, etc., and asked why it was not proposed to do so at this time. Mr. Chambers said that the conditions are now different, that a difference of a few cents in the rate would not affect food prices, that the railroads need the percentage of advance which they have asked and that if any exceptions were to be made he would not know how to select them. Mr. Elmquist said that the rate on lumber from the Northwest to New York, now 80 cents, would be increased to \$1.00, while a rate from the South would be increased only to 50 cents and asked if the difference would not interfere with the movement of traffic. Mr. Chambers said the difference might make it more difficult for the West to compete with Southern lumber. When Mr. Elmquist said that the price of lumber had been reduced \$30 per thousand during the last two weeks, Commissioner McChord wanted to know what the price could have been before such a large reduction, but Mr. Elmquist was unable to answer.

Mr. Elmquist also quoted from a recent speech by Mr. Hines, in which he said that the Railroad Administration could get along on an increase of 7 per cent in rates. Mr. Chambers said that Mr. Hines did not get such informa-

tion from him. When Mr. Elmquist asked whether the carriers are not now expecting an improvement over the conditions of 1919, Mr. Chambers said he did not understand that they are; that while the situation was affected considerably by strikes during 1919 there had been strikes before, there had been a strike this year and probably there would be abnormal conditions in the future. The questioning of Mr. Chambers by representatives of the shippers was not completed within the time allowed for cross-examination and Chairman Clark said that it could be continued on Thursday but he suggested that the questioning be "confined to cross-examination."

The members of the commission have asked very few questions and have displayed an obvious desire to avoid delay to the proceedings by quibbling cross-examination. Commissioners Aitchison and Eastman have asked most of the questions that were asked from the bench. The three state commissioners that have been sitting with the federal commissioners have remained silent.

The hearing on Thursday was to be devoted to testimony on behalf of state commissions, the National Industrial Traffic League, whose executive committee has gone on record in favor of a percentage advance in rates, and other general testimony by shippers. The succeeding days to June 22 have been scheduled for evidence pertaining to particular commodities.

S. H. Cowan, Clifford Thorne, Graddy Cary and S. C. Rowe, representing live stock interests, have issued a circular letter expressing opposition to a rate advance greater than would be necessary to give the railroads a net operating income equal to the "standard return" guaranteed them during federal control, and urging that passenger, baggage, mail and express rates be increased as well as freight rates, and that the advances should be so adjusted as to let the least burden fall upon the food products from the farm and the ranch. "Since valuation cannot be found except on a guess," the letter says, the statutory rule prescribing a relation of $5\frac{1}{2}$ or 6 per cent cannot apply, the conditions being impossible of ascertainment, and "reasonable rates" should be fixed upon "general principles" as heretofore.

Car Service Conditions

WASHINGTON, D. C.

IN response to the telegram of the Interstate Commerce Commission to Daniel Willard, chairman of the Special Committee on Car Service Matters, of the Association of Railway Executives, with respect to non-compliance with the service orders of the commission, which telegram was made public on June 2, the commission announced on June 3 that it had received the following reply from Mr. Willard:

"Your message this date has just been received in New York and I have taken matter up by wire with executives of all carriers upon whom your orders one, two and three have been served. Have repeated your message in full and have urged their prompt and complete compliance therewith. I hope their response will be such as to make unnecessary further action on the part of the commission. You may be assured of the full support of myself and committee of which I am chairman."

The Interstate Commerce Commission on June 3 made public a report made by the American Railroad Association showing the number of cars loaded with revenue freight for each week beginning with March 21 and including May 22, compared with the corresponding weeks in 1918 and 1919. This showed a falling off during the strike period and a gain since April 17, while the figures show a large increase over 1918 since May 1, although still below the high record

set in 1918. The revenue loading for the weeks ending on the dates given were as follows:

	1918	1919	1920
March 27		608,572	741,502
April 3	927,575	585,247	722,738
April 10	958,119	612,860	646,852
April 17	976,991	619,792	515,861
April 24	998,880	552,196	542,511
May 1	1,000,860	612,763	634,837
May 8	998,588	670,857	720,641
May 15	1,000,746	653,240	698,390
May 22	998,035	688,424	750,978

The 1919 and 1920 figures do not include the Pennsylvania and several other roads that failed to report, but which, it is estimated, would add at least 100,000 cars a week to the total. On this basis the 1920 loading would be about 80 to 85 per cent of that for the corresponding period of 1918.

The accumulation report for May 28 shows 159,209 cars held in greater numbers than could be handled or disposed of currently, as compared with 168,000 the week before and 269,000 on April 24. There has been a steady reduction in the accumulations since that date but the improvement shown has been slow, partly because of the inability of consignees to unload at places where the longshoremen's strikes are still in effect. Of the total on May 28, 48,000 cars were held because of the inability of consignees to accept them, 14,640 on account of embargoes, and 35,009 were for export.

The American Railroad Association has resumed the publication of reports showing car surpluses and shortages, or "deferred car requisitions" as they are now termed. J. E. Fairbanks, general secretary of the association, on May 28 issued a circular including a summary of the reports, compiled by the Commission on Car Service, showing an average of deferred car requisitions for the period May 1 to 8 of 79,272, as compared with 87,346 for the period April 1 to 8. The average surplus was 4,616, as compared with 6,370 in April. For the week ending May 23 the average of deferred car requisitions had increased to 98,936 and the average surplus had been reduced to 2,909.

In a circular addressed to the railroads on June 2, Chairman Kendall of the Commission on Car Service said the production of bituminous coal during April and May has been averaging two and one-half million tons per week less than what is necessary for the country's adequate fuel supply and particularly to permit a sufficient movement up lake to the northwest and ocean and rail to New England to protect next winter's consumption in those sections. The average placement on bituminous coal loading roads has been approximately fifty per cent.

In order that coal production may be increased and discrepancies in placement as between commodities made up, the circular said, it is necessary that:—

1. Railroads must distribute available coal cars for loading coal to a minimum of 50 per cent of actual requirements before distributing coal cars for loading other commodities.

2. Railroads may distribute available coal cars for loading other commodities requiring open cars to an extent not exceeding 50 per cent of actual requirements based on ability to load and ship, and any surplus as available shall be applied to increase the supply for coal loading.

3. Railroads having no coal loading will restrict the supply of coal cars for loading of other commodities requiring open cars to an extent not exceeding 50 per cent of actual requirements based on ability to load and ship. Foreign cars used in this manner must be loaded strictly in accordance with car service rules, and must not be back-hauled for loading.

4. Coal-carrying cars must not be used for the loading of automobiles and other commodities which can be transported in box-cars and other types of equipment.

In another circular Mr. Kendall said: The extended time within which the common carriers shall make their freight

cars actually in service conform to certain standards of equipment prescribed by the Interstate Commerce Commission expired on March 1, 1920. Indications are that petition for extension of this time will be denied, although the provisions for penalties accruing may be postponed until November 1, 1920. This means that the railroads will have until November 1, but not beyond, to comply with the safety appliance law and it is important that the work be completed by that date.

To meet this condition it is necessary that railroads immediately load all foreign cars on their lines not fully equipped with safety appliances, to the owning road. If load is not immediately available waybill cars empty to home road at once via the shortest route and to the nearest junction. A list of these cars will be issued to all railroads by this commission as soon as necessary information is received. Commencing with records as of July 1, and as of the first of each succeeding month, all railroads will report all such cars that may be on their line.

Railway Claim Agents

THE THIRTY-FIRST ANNUAL CONVENTION of the Association of Railway Claim Agents, which was held at Atlantic City, N. J., on the 19th, 20th and 21st, was briefly noted in our last issue, page 1584.

Restoration and re-employment of injured employees was one of the principal topics discussed by the convention. F. A. Hruska, (N. Y. C.) chairman of the committee, presented a comprehensive review of the present situation. He summarized the reports which were made last August by Dr. D. Z. Dunott, chairman of a committee appointed by the United States Railroad Administration, in which it was shown that only one road, the Illinois Central, had a reconstruction department for the education of injured employees. On 144 roads answering questions of the committee there were 222 employees totally disabled in 1918, and 2,363 partially disabled. Most of the railroads seem to feel no need for any further or different organization in this matter. The committee notices a clinic for functional re-education at No. 5 Livingston Place, New York City, where both soldiers and civilians are treated and trained. The American Red Cross Institute is another establishment in New York City (311 Fourth Avenue).

Employees generally do not take kindly to schooling; and yet the committee believes it would be wise for the American Railroad Association to consider the establishment of some school or institution. The seniority rules of the brotherhoods interfere with the placing of injured employees in positions best suited to their capabilities. The committee believes that educational work in this field should be carried on by the claim departments of the railroads, the officers of which come closely in contact with individual cases.

The committee on Compensation, F. V. Whiting (N. Y. C.) chairman, presented a review of the present status of state legislation in this field. Only six states are now without laws of this kind—Arkansas, Florida, Georgia, Mississippi, North Carolina and South Carolina. The committee recommended that efforts be made to have the broad general principles of compensation laws made uniform by legislative action in each state. The rights of the employer to insure himself should be carefully guarded; attention should be given to the six states which do not grant this right.

Publicity in the handling of claims was the subject of an interesting paper by H. B. Hull (Ill. Cent.). The newspapers give prominence to many things about damage claims which are unfavorable to the railroads, but often fail to give reasonable prominence to the other side of the matter. Mr. Hull believes it a good thing to use the employees' magazines to give their readers right impressions of results of

trials of cases in court. Nothing should be concealed from employees or the public. Take special care not to exaggerate. Whenever an attempt is made to perpetrate fraud on the railroad, the matter should be made public; and if the efforts are successful it may occasionally be advisable in subsequent years to remind the public of the facts. The speaker cited cases where passengers had recovered heavy damages and afterwards were found to have deceived the court and the juries, claiming ill health falsely.

Pamphlets and advertising space in newspapers can be used to good advantage. The Illinois Central in this way made an appeal to farmers who allow their cattle to stay on the tracks, and the appeal had good results. President C. H. Markham, of the Illinois Central, believes in taking the public into his confidence and this spirit now actuates the entire organization of the railroad. This has resulted in a good many newspaper controversies but the effect on the whole is regarded as beneficial.

The committee on grade crossings, S. J. Peterson (U. P.) chairman, presented a report containing suggestions relative to reducing automobile disasters at crossings. A committee should formulate and submit to the railroad managements a plan for securing the co-operation of automobile clubs, superintendents of highways and the railroad brotherhoods. The committee submitted fifteen points on which effort should be concentrated to improve conditions at crossings, and another long list of features in which legislation ought to be sought.

H. L. Dunham (C. & O.), discussing practices developed during federal control of the railroads, with a view to seeing which of these should be deemed of permanent value, declared that the feature of *least* value was the handling of employees' damage claims through brotherhood grievance committees, instead of directly with the persons injured. The railroad may be bound by the decision reached at a conference with the grievance committee but the employee is not; and he still may go into court. The only proper course is to adhere strictly to past practices and give such employees exactly the same treatment that is accorded to all other employees.

J. Donahue (L. & N.) read a short paper on the desirability of keeping records of physical examinations. Many claims have been settled for hernia and other alleged injuries said to have been received while on duty which really were of long standing but not discovered when the man was examined; or else discovered but not properly recorded in permanent shape. An instance was cited where a machinist sustained an injury to an eye and it was discovered that the man's other eye already was sightless; in other words the injury made him totally blind. This man's wife testified that she had been married to him for several years before she learned that his vision was defective. It would be a good thing to have periodical examinations of employees in service, as a precaution against fraudulent claims. Touching upon mental examinations, Mr. Donahue said that on southern roads many good employees are men who when first taken into the service were illiterate; a rule against admitting such would be detrimental to the service. Many men from the mountains come into the service and do good work; they take advantage of the Y. M. C. A. and other educational institutions, and ultimately fit themselves for promotion.

H. H. Downs, chief claim agent of the New York Central at New York City, read a paper on fraudulent claims, citing a long list of interesting cases.

THE HUDSON VEHICULAR TUNNEL and the Delaware River Camden-Philadelphia Bridge bills were passed by the New Jersey legislature over the veto of Governor Edwards. The bills will be voted upon by the people at the next election.

Rules for Prompt Payment of Freight Charges

THE INTERSTATE COMMERCE COMMISSION on June 4 issued the following rules and regulations governing the payment of freight charges, to become effective on July 1, under the authority given it by the transportation act, which will take the place of the rules prescribed by the Railroad Administration in General Order No. 25 and a subsequent circular:

1. Where retention of possession of any freight by the carrier until the tariff rates and charges thereon have been paid will retard prompt delivery or will retard prompt release of equipment or station facilities, the carrier, upon taking precautions deemed by it to be sufficient to insure payment of the tariff charges within the period of credit herein specified, may relinquish possession of the freight in advance of payment of the tariff charges thereon and may extend credit in the amount of such charges to those who undertake to pay such charges, such persons being herein called shippers, for a period of 96 hours to be computed as follows:

(A) Where the freight bill is presented to the shipper prior to, or at the time of, delivery of the freight the 96 hours of credit shall run from the first 4:00 p. m., following the delivery of the freight.

(B) Where the freight bill is presented to the shipper subsequent to the time the freight is delivered the 96 hours of credit shall run from the first 4:00 p. m., following the presentation of the freight bill.

2. Every such carrier shall present freight bills to shippers not later than the first 4:00 p. m. following delivery of the freight, except that when information sufficient to enable the carrier to compute the tariff charges is not then available to the carrier at the delivery point, the freight bill shall be presented not later than the first 4:00 p. m. following the day upon which sufficient information becomes available to the delivering agent of the carrier.

3. Shippers may elect to have their freight bills presented by means of the United States mails, and when the mail service is so used the time of mailing by the carrier shall be deemed to be the time of presentation of the bills. In case of dispute as to the time of mailing the postmark shall be accepted as showing such time.

4. Sundays and legal holidays, other than Saturday half holidays, may be excluded from the computation of the period of credit.

5. The mailing by the shipper of valid checks, drafts, or money orders which are satisfactory to the carrier in payment of the tariff charges, within the period of credit prescribed above, may be deemed to be payment of the tariff charges within the period of 96 hours of credit. In case of dispute as to the time of mailing the postmark shall be accepted as showing such time.

The carriers have estimated that the enforcement of General Order No. 25 provides them with working capital of approximately \$75,000,000, which, if the customs and practices in the extension of credit to shippers in vogue prior to the enforcement of that order were restored, would generally be outstanding as unpaid transportation charges.

The carriers asked that the rules and regulations to be promulgated should follow, as nearly as is practicable, the provisions of General Order No. 25 and the circular. A large number of the shippers joined in a request that in certain cases and upon surety bonds being furnished by the shippers, the carriers should render freight bills daily, and periodical statements of the bills on the 7th, 14th, 21st, and last day of each month, and that the shippers shall pay the bills within three days after receiving the statements. The shippers and the carriers acknowledged that a large proportion of the shippers do not need, and will not ask for, credit,

and that such credit is necessary only in connection with forwarding or delivery of those whose shipments are extensive or in connection with shipments received or delivered by the carriers under circumstances hereinafter described. The maximum period of credit suggested by the carriers as proper and necessary was 96 hours, and the period asked by many of the shippers was that of weekly settlement as described above. A few of the shippers, including the Lake Superior Iron Ore Association, asked that the rules and regulations should permit carriers to resume the practices antedating General Order No. 25—that is, to extend long periods of credit to shippers—but that practice is now clearly prohibited by the statute.

In its opinion the commission said in part:

"With but few exceptions the shippers have indicated that they do not expect credit for the purpose of financial accommodation in the amount of the transportation charges. The shippers ask that the rules and regulations which we promulgate shall provide for a short period of time between the delivery of the shipments or the rendering of the freight bills and the payment of the transportation charges, the following reasons being representative:

1. Several shippers have asserted that this brief extension of credit is necessary to enable them to audit the freight bills and correct erroneous applications of rates prior to payment of charges incorrectly computed by the carriers.

2. Both shippers and carriers requested that a reasonable time be granted for the computation of transportation charges, the presentation of freight bills, and the collection of charges on shipments, which, in accordance with custom and practice or tariff revisions, are collected upon destination elevator, cotton compress, official, certified, or other destination or outturn weights, the weighing being customarily done after the delivery of the shipments at destination.

3. Upon certain freight traffic, in accordance with tariff provisions for the computation of transportation charges at outturn weights or values ascertained by consignees, it is not customary for the carriers to make, or present to shippers, bills for the transportation charges until after the carriers have relinquished possession of the shipments at destination.

4. Many large shipping corporations are engaged in the operation of mines, the production of lumber, or production of raw materials, and other commodities in sparsely settled districts far removed from banking facilities, where the carriers and shipping corporations do not maintain, and can not reasonably be expected to maintain, office forces entrusted with funds for the settlement of transportation charges. A large tonnage of freight traffic is customarily shipped to and from the operations in such districts. An undue burden would be placed upon industry if rules and regulations should require financially responsible shippers, such as mining companies and other corporations, to station appropriate employees at each of their several mines or operations to pay transportation charges on shipments consigned to such operations. It is not always advisable to entrust or encumber those engaged in trucking freight for shippers with funds for the payment of transportation charges. The foregoing is a sufficient recital of the exigencies described at the hearing.

"The carriers assert that the number of erroneous freight bills has not been large, and the rendering of incorrect freight bills is a temporary war-time condition, ascribable to the unusual labor turnover during the past four years, which will soon be remedied. Section 6 of the interstate commerce act provides that no carrier subject to the provisions of that act shall demand, collect, charge, or receive a greater or less or different compensation than is provided in the published tariffs. Section 3, paragraph (2), does not authorize carriers to extend credit to shippers in order that the shippers may have time to audit freight bills and thereby guard against

claims for overcharges or undercharges subsequent to payment of the freight bills. We expect the carriers to take action that will substantially reduce the number of erroneous freight bills rendered.

"The intention of Congress to require by statute the enforcement of the provisions of General Order No. 25, as supplemented, in so far as they may be reasonably applied is manifest. Those provisions have been in force for 22 months and the business methods of the shippers and carriers have been adjusted to conform thereto. The rules and regulations which we promulgate should contemplate the collection of transportation charges prior to, or contemporaneous with, the delivery of most shipments, and, while adhering to the principle of prompt payment of charges, should, upon certain freight traffic, give opportunity for the preparation of freight bills at destination, weights to be ascertained after the carriers have relinquished possession of freight, and for the presentation of freight bills to the appropriate offices and employees of shippers by United States mail, by messenger, or by other proper means, and for payment of the charges in the regular course of business by the shippers.

"In the rules and regulations which we promulgate we will not undertake to deal with several matters which were covered by General Order No. 25. We will not prescribe rules for the collection of prepaid charges on shipments of freight, or for the collection of passenger fares or baggage charges, or for the form or character of surety bonds. We believe that our order will admit of the application to those matters of the provisions of General Order No. 25, as supplemented, or other appropriate rules to be formulated by the carriers, and that we should leave the carriers free to prescribe these and other details in the instructions which we expect that the carriers will issue for the guidance of their agents. We expect that carriers will refrain from granting undue extensions of credit that might arise from the transmission of freight bills, checks, drafts, and money orders through the mails to or from offices of shippers that are located at a considerable distance from the places where the carriers relinquish possession of the freight."

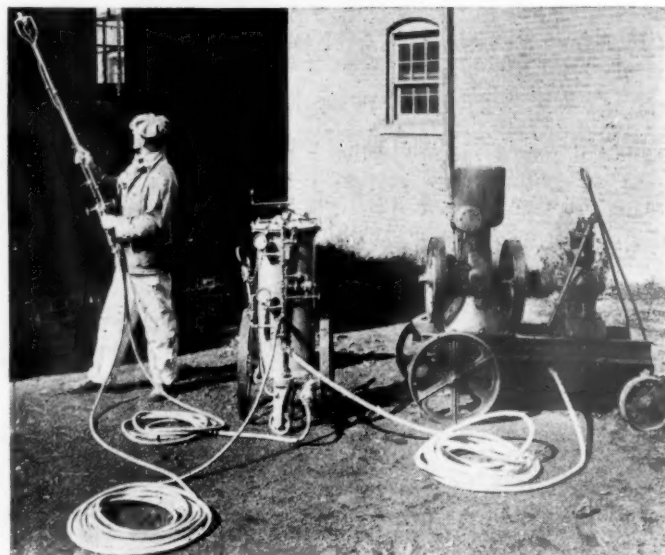
An Enclosed Jet Paint Sprayer

A PAINT SPRAYER embodying a number of innovations in design and principle has been placed on the market by the Vortex Manufacturing Company, Cleveland, Ohio, and is known as the Vortex paint sprayer. The particular features of this sprayer are involved in the design of the nozzle, which is such that the paint and air which are conducted to the nozzle through independent conduits are discharged from it through separate openings—the paint through a central port and the compressed air through an annular opening—surrounding the paint outlet. As a consequence the jet of paint is completely surrounded by a cone of compressed air which is said to afford a definite reduction in the tendencies towards spattering and the formation of paint clouds.

The nozzle affords ready adjustment for the relative discharge of paint and air in addition to a trigger control for the stopping and starting of the flow. By shutting off the supply of paint the machine may be used as an air brush to blow dust from the surfaces before painting. The sprayer is said to carry a large volume of paint, owing to the fact that it does not produce a thinly divided spray but applies a relatively heavy liquid. Good penetration of rough surfaces is insured because of the brushing effect of the high pressure air discharge. An arm or extension handle is provided for this sprayer so that the paint may be applied nearly 12 ft. away from the operator's hands. This greatly reduces the necessity for ladders and scaffolds. Recently a

water tank having its top 18 ft. above the platform upon which the work was done was painted complete without the use of any staging or ladders whatever.

The device is furnished complete with an air compressor driven by a gasoline engine and a paint reservoir pressure tank, both mounted on wheels. On plain interior work



The Sprayer in Use, with the Complete Outfit in the Fore-ground

where conditions were favorable, experienced operators have covered as much as 2,000 sq. ft. of surface per hour, less experienced operators have readily placed 1,000 to 1,600 sq. ft. per hour. The water tank referred to above had 3,500 sq. ft. of surface, which was coated in 3½ hours.

Duplicate Tracings

A NEW PROCESS has been introduced for making waterproof tracings on cloth, paper or other pliable material, from original tracings by means of a photochemical process. The reproduced tracings may be either of the same size or an enlargement or reduction of the original, the lines on the reproduced tracing being formed in a waterproof coating placed upon the cloth or paper. As a consequence the lines do not rub off in the handling of the tracing, although the coating lends itself readily to erasing when alterations are to be made. The coating also permits the addition of lines to the tracing with the use of the ordinary India ink as on regular tracing cloth. The process used also provides for the elimination of any portions of the original tracing which it is desired not to reproduce. These duplicate waterproof tracings are made by the American Blueprint Paper Company, Chicago, under what is termed the Baker print process.

THE RAILWAYS OF URUGUAY, during the year ending June 30, 1919, enjoyed an increased traffic, but in spite of this, if the sections of the Central railways be excepted, although traffic and receipts had grown, expenses also increased to such an extent that the economic situation of the railways was but little improved. The Government paid both the Midland and the Northern railways the full amount of the guarantee. On the other hand, the Central returned to the State 86,120 pesos, being two-thirds of the excess over 6 per cent of the net receipts from the northern extension, eastern extensions and northwest branch.

General News Department

An airplane was kept continuously in the air, near Paris, on June 4, for 24 hours 19 minutes 7 seconds. The distance traveled during this time was estimated as 1,915 kilometres, or 1,190 miles. This record, made by Lieutenants Bossoutrot and Bernard, was more than two hours better than the best previous record.

The "Old Guard" of the Nashville, Chattanooga & St. Louis—34 veteran employees of that road—held their annual dinner at the Union Station, Nashville, Tenn., on May 31. Major William L. Danley, who entered the service in 1857, and who for about fifty years was general passenger agent, is secretary of the organization. Of the eight negroes who were present, one Lige Kaiser, said that he began his railroad service in 1849. Under the present regulations, members of this body are those who have been in the service of the road 40 years, or who were in the service prior to 1870.

The Order of Railroad Station Agents, at its biennial convention recently held at Pittsburgh, Pa., voted, after discussions lasting three days, to eliminate the word "strike" from its constitution. This action was taken because of the organization's faith in the provisions of the Transportation Act for the handling of employees' grievances. The organization also voted to remove its headquarters from Boston, Mass., to Chicago. So far as can be ascertained at the present time, this is the first organization of the kind, composed of railroad employees, which has, because of this faith, eliminated strike clauses from its constitution.

Shopmen of the Virginian Railway, who left their work and disarranged traffic for two weeks, returned to work on June 1. The strike began at the Princeton shops, where a boilermaker was discharged for refusing duty. He was reinstated, but denied two days' pay for the time which elapsed between his discharge and reinstatement. Because of the railroad's refusal to pay this two days' wage, a strike was called, and 835 men walked out at Princeton and other points on the line. The coal piers at Sewall's Point had to be operated by green hands. The terms on which the men returned to work are not published.

Store-door delivery of freight, and the economies attainable by means of it, were illustrated recently at Indianapolis, Ind., by a temporary expedient adopted to clear a congested freight station. A condition necessitating embargoes being immediately in prospect, an agreement was reached, through the Chamber of Commerce, under which consignees accepted shipments of goods from any truckman who delivered them and the truckmen arranged to load at the freight house the most readily accessible freight; and the trouble was cleared up within six days. This, says The B. F. Goodrich Rubber Company, in reporting the incident, should impress on the railroads the value of motor trucks as the essential instrumentality in securing a constant flow of shipments through freight houses. And the rubber man sees prospects of numerous orders from railroad companies for large capacity motor trucks. How these trucks can be obtained, with the factories all reporting large numbers of unfilled orders, he does not explain.

Recess Appointments to I. C. C.

President Wilson on June 9 announced recess appointments of Henry Jones Ford, James Duncan and Mark W. Potter as members of the Interstate Commerce Commission. The President's nominations of these men had not been confirmed by the Senate when Congress adjourned on June 5, but had been referred to the Senate committee on interstate commerce, which had failed to take any action on them.

Germany's Economic Position as a World Nation

In the description of the roadbed on the German railroads in the issue of April 16, on page 1199, it was stated that the maximum allowable axle load on some of the heaviest locomotives does not exceed 18,000 lb. This should have been 18,000 kilos.

Changes in Rules of Interchange

V. R. Hawthorne, secretary, American Railroad Association, section 3, announces that rule 3, section k, of the rules of interchange, 1919, has been modified to read that "No car will be accepted in interchange unless properly equipped with United States Safety Appliances, or United States Safety Appliances, Standard, except cars moving home on car service orders for equipping with safety appliances. Cars will not be accepted from owner at any time unless equipped with United States Safety Appliances or United States Safety Appliances, Standard."

Also that rule 3, section o, is modified to read "Cars built after November 1, 1920, will not be accepted in interchange unless equipped with 6 in. by 8 in. shank A.R.A. Standard Type D Couplers."

Department of Public Works Not Approved

The proposal that the Chamber of Commerce of the United States advocate the establishment of a government Department of Public Works has been voted down by the chamber's membership. The votes on the three propositions submitted were: Shall a Department of Public Works be established by the national government? In favor, 826; against, 549; necessary to carry, 917. Shall a Department of Public Works be established by a suitable modification of the existing Department of Interior? In favor, 675; against, 679. Shall a Department of Public Works be established by creation of an entirely new department? In favor, 282; against, 992. Of the 1,250 member organizations entitled to vote, 477 voted. The referendum was taken at the instance of Engineering Council.

American Society for Testing

Materials Submits Specifications

The American Society for Testing Materials, at a recent meeting of the American Engineering Standards Committee, submitted five standard specifications for approval as "American Standards."

- 1.—Standard Specifications for Drain Pipes.
- 2.—Standard Test for Toughness of Rock.
- 3.—Standard Test for Penetration of Bituminous Materials.
- 4.—Standard Method for Distillation of Bituminous Materials Suitable for Road Treatment.
- 5.—Standard Method for Sampling Coal.

All of these specifications are included in the Proceedings of the American Society for Testing Materials. These specifications were referred to a special sub-committee to make recommendations to the American Engineering Standards Committee for final action.

Thirteen Passengers Killed Near Schenectady

In a rear collision on the New York Central about four miles west of Schenectady, N. Y., on the morning of June 9, about 1 o'clock, 13 passengers and one employee (Martin Doyle, engineer of train No. 34) were killed, and 40 passengers and one porter were injured. The leading train, eastbound express No. 28, which had been stopped because of trouble with a pipe on the locomotive, was run into at the rear by No. 34, consisting of a locomotive and nine express cars, and the rear car of No. 28, a sleeping car destined for Boston, was split nearly its whole

length. Train 34 had run past two automatic block signals, caution and stop, set against it, and also past a flagman displaying a red light. The line of road is nearly or quite straight and there was a view of the standing train for half a mile, the weather being clear. The flagman of No. 28 said that No. 34 did not heed his red light, and he threw a lighted fuse into (or at) the cab, but to no effect, so far as he could see. The flagman said that he was back "30 car lengths." The engineman had told the fireman to jump, and himself had started to get off when the engine struck the standing train.

Labor Leaders Want Congress to Stay on the Job

Officers of 16 railroad labor organizations on June 3 sent the following telegram to President Wilson, Speaker Gillette and Senator Lodge protesting against the adjournment of Congress:

"As the responsible heads of railroad labor organizations representing more than two million workers, we protest most earnestly and most emphatically against the proposed adjournment of Congress next Saturday in accordance with the plan reported in the public press. We call attention to the fact that despite the revelations as to the profiteering scandal Congress has done nothing to check the evil or to punish the evil-doers, that the cost of living continues to advance without a single remedial measure having been passed, and that there has not been even serious consideration of constructive legislation dealing with the serious problem of industrial unrest. In the circumstances it appears to us incredible that the responsible leaders of the government at Washington can assent to this seeming agreement of continuation of a 'do-nothing' policy which means that the grave economic problems of the people are to be made the plaything of politics and politicians for the next five months. It invites political chaos and business disaster. Congress should remain in session."

Freight Thefts Amounting to Millions

In the United States District Court at New York City on June 7, the Grand Jury brought indictments against forty-eight men charged with complicity in a conspiracy under which goods amounting in value to \$1,000,000 have been stolen from freight cars in and around New York City during the past few months. The prosecuting officers say that the sum named represents not more than one-sixth of the total value of goods lost, and that half of the whole—\$3,000,000—represents silk and other articles stolen from cars in the yards of the New York Central within the last few weeks. Among the men indicted are two wholesale merchants, the proprietor of a storage warehouse, and some employees of railroads, including a railroad detective. Of the men indicted 41 have been arrested and have been released on bail bonds of from \$5,000 to \$20,000 each. Officers of the New York Credit Men's Association and of the city police department co-operated with railroad police in getting the thieves.

One of the prosecuting officers cites the following example of the ingenuity of the thieves:

A carload of woollens arrived in the Erie freight yards in Jersey City. For the purpose of obliterating the identity of the car some member of the gang painted out the final numeral. With the collusion of yardmen and freight crews the car then was cut out and run to Soho, N. J., near Bloomfield. On its arrival the car would be met by trucks belonging to a trucking company. It then was removed in the automobiles to a "fence" in New York. A trucking concern was indicted.

Construction Progress on the Pacific Great Eastern

The Pacific Great Eastern, according to the report of the British Columbia Railways Department, made appreciable progress on its construction during 1919 and contemplates the completion of the line to Prince George in 1920. The line, which is projected from Vancouver, B. C., northward to Prince George on the Grand Trunk Pacific, has been under construction for a number of years, but up until the close of the European war only 181 miles of track had been laid. This included the lines from North Vancouver to Whytecliffe, 13 miles, and from Squamish Dock to Clinton, 168 miles. Considerable grading

and clearing had been done on long stretches of the remaining portions of the line.

A large part of the work done during 1919 consisted in the improvement of the portion of the line which is in operation including the lining of track, the construction of bank protection, fencing, repair of tunnel cave-ins, etc. In addition, track was laid for about 77 miles from Clinton to a point about 10 miles north of Williams Lake. The work also included considerable lengths of side tracks, 250,000 cu. yd. of ballasting, 49 miles of fencing and 15 bridges containing 1,750,000 ft. of timber.

This year it is hoped to complete the road to Prince George, about 100 miles of line, which involves the restoration of the road-bed previously completed, about 20 miles of new construction in the form of a relocation north and south of Quesnel, a steel viaduct over Deep creek and a cantilever bridge across Cottonwood canyon.

A supplementary project which has been laid before the government is a branch line from the Pacific Great Eastern at Clinton in a southwesterly direction to a junction with the Canadian National Railways on the Thompson river, at Ashcroft, a distance of 41.5 miles. For 34 miles of the distance from Clinton, the line is on an almost continuous one per cent descending grade, the remaining seven miles into Ashcroft being a 2.2 per cent compensated grade which would be operated as a pusher grade. The Ashcroft-Clinton cutoff is a strategic point for railway building and any road which secures the route will control the whole traffic of the Pacific Great Eastern to Fort George and the Peace river.

Railway Returns for March

The Interstate Commerce Commission on June 9 issued a partial summary of the operating results of the railroads for March and three months of this year, showing a net railway operating income for the month of \$10,206,576, as compared with \$9,396,592 for March, 1919, and of \$63,000,000 for the three months of 1920, as compared with \$34,000,000 during the corresponding period of 1919, but it was explained that these figures include back mail pay to the extent of approximately \$50,000,000, which was included in the accounts for the month of January.

Railway operating revenues for March were \$450,470,217, as compared with \$368,096,045 in March, 1919, but the operating expenses were \$417,343,385, as compared with \$341,030,031. Maintenance of way and structures expenditures showed an increase of \$8,000,000 and maintenance of equipment expenditures showed an increase of \$20,000,000 for the month.

Federal lap-over items settled during the month are included in the compilation for those roads that have indicated that estimates were not included for substantially all unaudited corporate items. In addition, the following amounts of lap-over items are included for those roads from which the information in regard to the inclusion of estimates is not available: Eastern District—Operating revenues, \$4,260,044; operating expenses, \$8,885,425. Southern District—Operating revenues, \$658,921; operating expenses, \$892,524. Western District—Operating revenues, \$1,096,176; operating expenses, \$1,936,767. It is possible that in the final summary the net operating income will be increased accordingly if complete responses from carriers indicate that the foregoing item should be excluded.

The war taxes of the corporations are included in the figures for March, 1920, but not in those for March, 1919, nor for January and February of either year.

In making comparisons with the federal figures for 1919, it should be noted that the corporate figures for 1920 include some items classified principally under the general account, general expenses, and the primary account, railway tax accruals, that did not enter into the accounting for the expenses of federal control.

APPROVE RATE INCREASES.—With very few exceptions, the request of the carriers' current application for rate increases has been seconded, or approved in principle, by commercial bodies, trade organizations and leading newspapers the country over. Rate advances are not welcomed, of course, but they are recognized as necessary, and the good of the transportation service is ranked by general consent superior to the objections against increase of transportation costs. The general demand is for efficient service, and there is a general willingness to pay the price.—*New Orleans Picayune.*

Traffic News

The number of automobiles in the country at the present time, as estimated by the B. F. Goodrich Rubber Co., is 7,596,424, of which seven-eighths are passenger cars. The number of auto trucks, now less than one million, is expected by 1926 to be nearly seven millions, as calculated by this estimator; and by 1933 it is predicted that probably there will be as many freight motors as passenger motors.

The Senate on June 4 adopted a resolution by Senator Walsh of Massachusetts calling on the Interstate Commerce Commission to furnish information as to the export movement of bituminous coal, with a view to affording a basis for possible embargo legislation. The House committee on interstate and foreign commerce on the same day failed to agree on a report on a bill by Representative Dallinger providing for an embargo on shipments of coal to foreign countries.

Priority orders for the movement of building and construction materials on the railroads as a means of relieving the housing shortage in New York and other cities have been asked by Senator William M. Calder, of New York, in a letter to the Interstate Commerce Commission. Senator Calder declares that housing conditions are becoming more acute and promise in many cities to reach an emergency as winter approaches. He asks also that no freight rate increases on building and construction materials be granted at this time.

Through trains and resumption of pre-war schedules recently announced by some of the western roads include the North Coast Limited of the Northern Pacific, which has been re-established between Chicago and Seattle running over the Chicago, Burlington & Quincy between Chicago and St. Paul; a through sleeping car between New Orleans and Denver, running over the Southern Pacific to Ft. Worth, Tex., and the Fort Worth & Denver City and the Colorado & Southern to Denver, and the Great Northern's Oriental Limited, which made its initial trip on May 30.

J. H. Beek, announcement of whose appointment as executive secretary of the National Industrial Traffic League, Chicago, was made in the *Railway Age* of June 4, (page 1586), was born in 1867, at Medina, Ont., and was in the railroad service for about 10 years from the time he was 16 until he was 26. He began as telegraph operator in 1883, on the St. Paul, Minneapolis & Manitoba, now part of the Great Northern. In 1885, he entered Hamline University, where he remained for four years, working during vacations on the railroad as a relief agent and operator. He entered the service of the Chicago, St. Paul, Minneapolis & Omaha in the office of the superintendent of telegraph in 1889, and was later transferred to the general passenger department. In 1893, he was elected secretary and traffic manager of the St. Paul Jobbers' and Manufacturers' Association. Mr. Beek graduated from the College of Law of the University of Minnesota in June, 1897, and practiced this profession for the ensuing five years. In 1903 he became credit manager for Brown & Bigelow, a manufacturing corporation, and three years later was re-engaged as a general secretary of the St. Paul Jobbers' and Manufacturers' Association, which was subsequently reorganized as the St. Paul Association of Commerce. In 1913, he was appointed traffic director of the Association since which time he has devoted his entire time to traffic work.

National Industrial Traffic League

The National Industrial Traffic League will hold its summer meeting at the Bellevue-Stratford Hotel, Philadelphia, Pa., on June 17 and 18. The two days will be occupied with reports from the Executive Committee, and committees on: Car Demurrage & Storage; Bills of Lading; Classification; Baggage; Coastwise Shipping; Rate Construction and Tariffs; Inland Waterways (a) House Bill providing for annual appropriation of \$100,000,000 for next five years for inland waterway and coast-

wise improvements (b.) Senate Bill S-4254 amending Panama Canal act, permitting Railroads to own and operate boats on Great Lakes; Freight Claims; Diversion and Reconsignment; Export and Import Traffic (a.) Ship mortgage bill (b.) Three per cent war tax on transportation charges (c.) Demurrage and storage on export traffic; Express (a.) Proposed advance in Express Rates (b.) Proposed change in Official Express Classification; Legislation (a.) Liability of Telegraph Companies; Claims Resulting from Intensive Loading; Railroad Leases and Side-track Agreements; Car Service as Administered by Commission.

The New York State Barge Canal

Edward S. Walsh, State Superintendent of Public Works, reports that the waterways of New York are now moving 94 per cent more traffic than at this time last year; this estimate is based on the first four weeks of navigation. Because of congestion on the railroads every available boat has been pressed into service, and not since the palmy days of the old Erie Canal has freight been offered in such large volume. Over fifteen million bushels of grain, in elevators at Buffalo, would go East by canal if there were boats to take it. Large quantities of freight imported at New York are now going West over the canal; millions of bushels of flaxseed grown in Argentina; ivory nuts from Panama; skins and hides from Iceland, China and Algeria; sugar from Cuba; sisal from the Philippines, and domestic freights of every conceivable description. On the Champlain division of the canal where most of the traffic is in lumber and forest products from Canada, the tonnage has developed beyond the ability of carriers to handle it. At Buffalo recently two scows were loaded with 200 sedan auto bodies for the Franklin Automobile Company, Syracuse, and this went through in less than four days.

Coal Production

A slow but steady increase marked the production of both anthracite and bituminous coal during the week ended May 29, according to the weekly bulletin of the United States Geological Survey. The total output of soft coal, including lignite and coal coked, is estimated at 9,425,000 net tons, an increase of 173,000 tons when compared with the preceding week. The rate of production is still 11 per cent below that of the first quarter of the year, and 25 per cent below that of October, 1919. The congestion of traffic caused by the switchmen's strike continues to be the principal factor limiting production. Its serious effect is shown by the fact that in the eighth week of the strike period production was still 1,590,000 tons less than that of the latest normal week (March 14-20).

The mine reports for the week of May 22 reflect the increase in production which had already been disclosed by the figures of railroad shipments. The average running time for the country increased slightly, from 46.0 to 48.5 per cent. There was a corresponding decrease in the loss of time because of transportation disability—from 46.9 to 43.8 per cent. The week was marked by a slight improvement in the car supply. On the average the soft coal mines were closed down 43.8 per cent of full time, or 21 hours, on account of transportation alone. Other factors caused an additional loss of 7.7 per cent. The acute character of the present car shortage is directly attributable to the switchmen's strike, which during the week in question continued to delay movements through the principal junction points from the Mississippi to the Hudson.

The Coal Problem in Massachusetts

The Springfield Republican, discussing the question how to supply New England with coal for next winter, says that "an embargo on coal exports, by special act of Congress, as proposed by Mr. Treadway and Mr. Dallinger for New England's benefit, 'is nothing but a dream.' The Massachusetts legislature may keep on adopting resolutions favoring the embargo, but such things get no coal for New England industries.

"Does anyone suppose that West Virginia, or Pennsylvania or Ohio, wants a coal embargo, when foreign buyers are paying \$13 a ton for bituminous at Hampton Roads, and are glad to get the coal at any price however extortionate? There should be a continuous organized scream from this section. The out-

look warrants it. Soft coal by way of the railroads is out of the question, in any but negligible quantities. The only supplies available must be shipped from Hampton Roads by water. But foreign buyers are so busy at that point that New England is virtually forgotten. Besides, there is a terrific congestion at the Roads, and the railroad tie-up is so severe that coal coming from there carries a demurrage charge of \$3 or \$4 and sometimes \$6 and \$8 a ton, due to the time the vessel has to wait for its load.

"An entirely satisfactory winter ahead may as well be thrown out of the calculation. However, let us not forget the Lever act. This war measure will remain on the federal statute book so long as a technical state of war continues. Under this the president can assume absolute control of the coal situation. He could stop absolutely all shipments of coal abroad, or could ration the foreign markets as well as provide for New England's needs. But the president, of course, would be more bitterly denounced than ever as an autocrat, a dictator, perhaps as a tyrant."

The Freight Situation in the West

In spite of another attempt on the part of "outlaw" strikers (this time including enginemen, firemen and switchmen) to cause a complete tie-up of freight traffic in the Chicago Terminal District, car movement and the general labor situation show little change. The Chicago Junction, the road most seriously affected by this new strike, reported that in one week it had fully recovered and was operating normally. Other roads operating in and about Chicago reported the same thing. Out of the total number of employees who were ordered to strike by the officers of the seceding railroad union, only 200 men actually quit work. The Chicago Junction is at present working at 90 per cent of normal. The Indiana Harbor Belt reports that an increase in car movement is shown for the first week in June, 1920, over the first week in June, 1919. During the week ending last Monday, 28,727 loaded and empty cars were moved, as compared with 22,477 for the same seven days in 1919.

The coal situation about Cincinnati, Cleveland and Pittsburgh continues to improve, although at a slow rate. Mills and foundries which were seriously affected by the shortage of coke and coal during the last month have recovered to a large extent and are rapidly re-opening their furnaces. Although labor conditions at the mines have held coal production below normal, the main source of trouble in the delivery of coal has been the shortage of cars.

Reports from Kansas City state that the confusion growing out of the switchmen's strike has been cleared; but the general shortage of cars has made it impossible to place cars for grain shippers in proper supply.

The transportation situation at St. Louis is greatly improved. Most of the roads are approaching a normal condition in both line and industrial service. There has been a steady recovery and a daily increase in the number of cars handled, and many embargoes were lifted on June 1.

At San Francisco all the terminals have cleared up materially. While there is a lack of box and refrigerator cars, the labor situation is causing most concern.

New Orleans reports that the labor situation is normal in every respect, although there is no surplus of men. There is a small shortage of freight handlers for the handling of export and import business. Railroads handling freight to Gulf ports continue to assure shippers of a normal situation.

The emergency situation in car shortage at St. Paul and Minneapolis is being handled in a satisfactory manner with the arrival of the first of the allotment of empty box cars ordered by the Interstate Commerce Commission. A quota of approximately 13,000 cars must arrive with the next two weeks. This would be 25 per cent less than the car requirements estimated as necessary by the Minneapolis Traffic Association.

Oregon and Washington lumber mills are encountering considerable trouble through the accumulation of unshipped lumber, due to a shortage of cars and also of ships. During the past week 119 mills in the Northwestern region produced 83,612,202 feet of lumber, but only shipped 46,860,000 feet by rail. There still remains a large unshipped balance for rail movement.

Commission and Court News

Interstate Commerce Commission

The Commission has issued a circular to electric railway companies subject to its jurisdiction calling for a considerable amount of statistical information required for the application of the rate-making provisions of the transportation act.

The commission has rendered an opinion, prepared by Commissioner Woolley, on the application of the United States Steel Corporation, the United States Steel Products Company and the railroad companies controlled by the steel corporation, asking a determination of the question whether the operation by the steel products company of two steamship lines through the Panama Canal is in violation of Section 5 of the interstate commerce act as amended by Section 11 of the Panama Canal act. The report finds that the ownership by the steel corporation of the stock of both the steel products company and the several applicant railway carriers (the Elgin, Joliet & Eastern, the Bessemer & Lake Erie and 17 others) constitutes an interest within the meaning of Section 5 of the interstate commerce act by the railway lines and water lines owned and operated by the steel products company, but that under present conditions, and conditions that seem probable in the near future, whatever competition there may be between the applicant railway carriers and the steamer lines of the United States Steel Products Company, operating between points on the eastern coast of the United States and ports on the western coasts of North and South America, through the Panama Canal, is unsubstantial and merely nominal.

North Carolina Rates Ordered Re-Adjusted

The Commission, in a report prepared by Commissioner Eastman, dated May 18, has ordered an extensive readjustment of freight rates from Norfolk and Richmond, Va., and other southern points, to be put into effect on or before September 10. Present rates between points in zones 1, 2, 3 and 4 in North Carolina and Norfolk and Richmond, Va., on the one hand, and points in South Carolina and the southeast, on the other; and between points in zones 1 and 2 in North Carolina and Norfolk and Richmond, on the one hand, and eastern ports and interior eastern points, on the other are found unduly prejudicial to the North Carolina points and unduly preferential of Norfolk and Richmond.

The principal complainants were the Corporation Commission of North Carolina and various commercial organizations in North Carolina cities. The North Carolina people have been pressing their demands for this re-adjustment for two years or more, and some of them are so overjoyed at the commission's decision that they talk of presenting claims for reparation amounting to many millions of dollars. One of the examples of the changes required by the decision is the following:

From New York to Richmond the rate on dry goods is 59½ cents. From New York to Raleigh the rate is \$1.20, a difference of 60½ cents; this difference will be reduced to 30 cents either by raising the rate to Richmond or lowering the rate to Raleigh. The Raleigh jobber can ship to McColl, S. C., at a rate of 30 cents lower than Richmond or Norfolk, whereas he now pays the Richmond-Norfolk rate.

United States Supreme Court

The United States Supreme Court on June 28 denied the motion of the Reading Company for a modification of the decree ordering a dissolution of the Reading combination.

Stipulation as to Basis of Value of Goods for Loss or Damage Held Invalid

The Supreme Court of the United States has affirmed the judgments of the Circuit Court of Appeals, Eighth Circuit, 260 Fed. 835 and the district court, 252 Fed., 664, holding that the

Cummins Amendment has made void the stipulation in the uniform bill of lading providing that "the amount of . . . loss or damage . . . shall be computed on the basis of the value of the property at the place and time of shipment . . ." The railroad had paid a shipper of grain delivered in Montana for transportation to Omaha, \$1,200 being the amount of loss so computed, but the value of the grain at the place of destination at the time when it should have been delivered, with interest, less freight charges, was \$1,422. It was held that the shipper was entitled to the difference between the two sums. The Supreme Court, while appreciating the convenience of the stipulation in the bill of lading and the arguments urged in its favor, held that as, in its opinion, the decision below was right and the conclusion was required by the statute, "neither the convenience of the clause, nor any argument based upon the history of the statute or upon the policy of the later Act of August 9, 1916, C. 301, 39 Stat. 441, can prevail against what we understand to be the meaning of the words." Opinion by Justice Holmes. Decided May 17, 1920. Chief Justice White dissented.

Demurrage on Frozen Ore—The Bunching Rule

In an action by the Pennsylvania for \$1,209 demurrage charges on 227 cars of iron ore, the consignee, having entered into the Average Agreement of the Uniform Demurrage Code, contended that the ore had been frozen in transit, and the detention of the cars beyond the free time had resulted from this fact, and claimed exemption from demurrage charges under the frozen shipment rule (Rule 8, Section A, Subdivision 2), declaring that none shall be collected "when shipments are frozen while in transit so as to prevent unloading during the prescribed free time." It did not appear whether the cars, which because numerous could not be unloaded within the 48 hours, came in one consignment or in many. The trial court disallowed the railroad's claim, and this was affirmed by the Pennsylvania Supreme Court. The Supreme Court of the United States has reversed the state court's judgment.

"Excessive receipts of cars is a frequent cause of detention beyond the free time even when shipments are not frozen. From the resulting hardship either the bunching rule or the average agreement ordinarily will furnish relief. If the company had not elected to enter into the average agreement, the bunching rule might have afforded relief under the circumstances which attended the deliveries here in question. Since any one of the 227 cars on which demurrage was assessed might have been unloaded within the 48 hours free time, the undue detention was not the necessary result of the ore therein being frozen, but was the result of there being an accumulation of cars so great as to exceed the unloading capacity. It does not seem probable, that those who framed and adopted the frozen shipment rule, and the Interstate Commerce Commission, which approved it, intended therein to depart from the established policy of treating the single car as the unit in applying demurrage charges as well as in applying carload freight rates."—Opinion by Mr. Justice Brandeis. Decided June 1, 1920.

Order to Install Cattle Scales Held Void

Following its decision in *Great Northern v. Minnesota*, 238 U. S. 340, holding that as the duty of a railroad is confined to furnishing appliances for its business of transportation and that cattle scales are not of such a character it follows that a railroad cannot be compelled to supply them as a means for building up the business of trading in cattle, however much the public would be benefited thereby, the Supreme Court of the United States has reversed a judgment of the South Dakota Supreme Court sustaining an order of the Railroad & Warehouse Commission of Minnesota directing the Great Northern to install a cattle weighing scales at Albee. The commission had found that all shipments of cattle from Albee during the three preceding years amounted practically to only 56 carloads, all moved in interstate commerce (to St. Paul) and that the universal rule is to determine the weight of cattle shipped in carload lots (as a basis of freight charges) not by weight taken at the point of shipment, but by a track scales at or adjacent to the point of delivery. The Minnesota case was held inapplicable by the commission because in South Dakota there was a common knowledge that railroad

cattle scales when established were for the benefit of both the public and shippers, enabling all who took cattle into the railroad yards whether for shipment or otherwise to ascertain their weight. The United States Supreme Court disapproves of the State Supreme Court's analogy of the duty to maintain cattle scales, to the duty to maintain cattle yards, applying which the state court, "without referring to the South Dakota statutes relied upon by the board, making it obligatory upon the carrier to put in cattle pens at all stations, without imposing any such duty to put in cattle scales, but on the contrary giving power only to inspect such scales when put in, held, wholly as a matter of first impression, that the identity between the two (cattle yards and cattle scales) was so complete that the obligation which existed to erect cattle yards at every station also established the duty to install a cattle scales at every station." Opinion by Chief Justice White.—*Great Northern v. Cahill & Redman*. Decided May 17, 1920.

Exceptions to the Adamson Law

The Fort Smith & Western and a trustee of a mortgage to secure bonds of the road sued to enjoin the road's receiver from conforming to the Adamson Law and to enjoin the United States District Attorney from enforcing the act. (No dividends have ever been paid on the stock, and no interest has been paid on the bonds since October 1, 1907. There is a yearly deficit in the earnings.) The receiver was appointed in proceedings to foreclose the mortgage. When the suit was commenced, in 1917, the railroad was being operated under an agreement with the men which the men desired to keep, but the receiver, yielding to the District Attorney's threats of prosecution, proposed to substitute the much more onerous terms of the Adamson act. It was contended that the act if construed to apply to this case is void under the Fifth Amendment. The Federal District Court for the Western District of Arkansas dismissed the bill. The Supreme Court of the United States has reversed this decree holding that the Adamson Law does not apply to such a case.

Mr. Justice Holmes, delivering the opinion of the court, said that, while in *Wilson v. New*, 243 U. S. 332, it was decided that the Adamson Law was within the constitutional power of Congress to regulate commerce among the states, the bill in that case raised only the general objections to the act that were common to every railroad. "In that case it was not necessary to consider to what extremes the law might be carried or what were its constitutional limits. It was not decided, for instance, that Congress could or did require a railroad to continue in business at a loss. See *Brooks-Scanlon Co. v. Railroad Commission of Louisiana*, 251 U. S. 396. It was not decided that there might not be circumstances to which the act could not be applied consistently with the Fifth Amendment, or that the act, in spite of its universal language, must be construed to reach literally every railroad subject to the Act to Regulate Commerce. It is true that the first section of the statute purports to apply to any such carrier, and the third to the compensation of railway employees subject to this act. But the statute avowedly was enacted in haste to meet an emergency, and the general language necessary to satisfy the demands of the men need not be taken to go further than the emergency required or to have been intended to make trouble rather than to allay it. We cannot suppose that it was meant to forbid work being done at a less price than the rates laid down, when both parties to the bargain wished to go on as before and when the circumstances of the road were so exceptional that the lower compensation accepted would not affect the market for labor upon other roads.

"But that is the present case. An insolvent road had succeeded in making satisfactory terms with its men, enabling it to go on, barely paying its way, if it did so, not without even the mortgage security, not to speak of its capital. We must accept the allegations of the bill and must assume that the men were not merely negatively refraining from demands under the act, but, presumably appreciating the situation, desired to keep on as they were. To break up such a bargain would be at least unjust and impolitic and not at all within the ends that the Adamson Law had in view. We think it reasonable to assume that the circumstances in which, and the purposes for which the law was passed import an exception in a case like this."—*Fort Smith & Western v. Mills*. Decided June 1, 1920.

Foreign Railway News

Cars and Engines Wanted in Peru

Commerce Reports, for June 2, has inquiries for two locomotives and a number of passenger cars and platform cars wanted in Peru; the Bureau of Foreign and Domestic Commerce will give information; file No. 41,936. Trade Commissioner Jackson suggests that it would be well to make prices delivered c. i. f. at Callao.

American Locomotives on

Portuguese East African Railways

The Lourenco Marques Railway has recently received eight American locomotives, five of the Santa Fe type and three of the Pacific type, and they have proved far superior to any of the foreign engines in use, writes Consul John A. Ray from Lourenco Marques, Portuguese East Africa, to Commerce Reports. The Lourenco Marques Railway connects the port of Lourenco Marques with the railway system of South Africa and is the principal outlet for the coal mines of the Transvaal as well as the most convenient route for imports into the region of which Johannesburg is the center.

England's Railway Exports

LONDON.

According to the Board of Trade returns, the exports of railway materials from the United Kingdom for the first three months of the present year as against the figures for the corresponding months for the year 1919, were as follows:

	First three months 1920	First three months 1919
Locomotives	£795,483	£162,989
Rails	386,691	120,917
Carriages (passenger cars)	286,202	57,414
Wagons (freight cars)	1,338,764	143,836
Wheels and axles	473,778	66,872
Tires and axles	317,135	207,389
Chairs and metal sleepers	100,327	22,870
Miscellaneous permanent way	1,831,286	290,284

The tonnage of rails exported was 22,339 for the three months ending March, 1920, as against 6,925 for the same period of 1919, and of chairs and metal sleepers 4,702 for the three months ended March 31, 1920, as against 1,327 for the same period of 1919.

During the month of March locomotives to the following value were shipped:

Argentina	£35,250
South Africa	93,576
India	97,266
Straits Settlements	31,500

Rails of the following value were shipped:

Sweden	£6,250
Argentina	4,610
India	33,943
Straits Settlements	16,908
Ceylon	15,966

Railway Notes from China

PEKING, April 24, 1920.

Work upon the unification program of the Chinese Government railways has been furthered during the past month, by a general operating conference. The delegates consisted of the traffic managers and locomotive superintendents of the several lines together with delegates from the Ministry of Communications. A tentative book of rules for train movement was introduced and adopted as basis for future decision after the delegates have had further opportunity to compare its provisions with rules now obtaining on their respective lines. The subject of signal lamps, and whistle and other signals was also under consideration.

* * *

A general traffic conference was also held, which among other things made certain alterations as to sizes and language in the uniform invoice proposed by the accountant's conference. It is

understood that the forms and regulations for uniform station accounts, which have been hanging fire for over a year, due partly to objections by the traffic managers will now be promulgated very shortly. Also, the conference adopted for all the government railways, the uniform classification and the uniform "conditions for carriage" which were drawn up by the "Through Traffic" conference last fall.

THE CONSORTIUM

The subject of all-absorbing interest in Peking for the past two weeks has been the Lamont mission. Mr. Lamont has made an excellent impression personally, but that gives no indication as to the reception which his project receives. Mr. Lamont has so far stood the gustatory gauntlet very well. His remarks at such occasions have been very clear and so far no one has been able to place a misconstruction upon them or to use any remark as the basis for an objection. The ground which he has held consistently is that

1. He represents the Consortium group of banks.
2. The Consortium financiers are not anxious to lend money to China, but will do so if China wants it under proper terms.
3. The Consortium can not be a success unless it has the cordial co-operation of the Chinese.
4. Loans for administrative purposes are not looked upon favorably in comparison with loans for railway and industrial purposes.
5. Japan will probably be a member of the Consortium unconditionally, because if she refuses Japan will be the worst sufferer.

The opposition to the Consortium plan has taken four forms. Officialdom has insisted that there be a loan for general political purposes as the price of a loan for any constructive purpose. It is reported that Mr. Lamont has definitely refused to advance anything further on the security of the wine and tobacco monopoly upon which the Pacific Development Company back in the winter advanced \$5,000,000. The "student movement" has taken a position hostile to all loans of whatever nature, on the ground that any loan to the present government merely fattens the purses of the present militaristic clique, whose overthrow is necessary to a sound China. Japanese opposition has masked itself by appearing friendly in the direct organs of the Japanese legation, but in directing a constant fire of innuendo (than which nothing is more effective in arousing Chinese suspicion) from the columns of some 15 Chinese dailies, which are under subsidy from Japanese sources. The fourth form of opposition comes from interests represented by Liang Shih Yi, "God of Wealth" as he is known in China, who demands that a group of Chinese banks shall be admitted to the Consortium. Liang is director of the Domestic Loan Bureau of the Ministry of Communications, a prominent member of the all-powerful Anfu Club, founder of the old "Chiaotung" or "Communications Clique," and the former Minister of Finance under Yuan Shih Kai. The handling of Liang will probably determine the outcome of Consortium negotiations.

* * *

Most strenuous opposition has developed against the proposed domestic loan for \$30,000,000 reported in these columns during past months, and designed among other things for the construction of a line from Shih Chia Chuang to Tehchow. It is reported that the Minister of Communications has admitted that a portion of the loan will be used for the redemption of the French loan on the Cheng-Tai (or Shansi railway) line. This makes the situation much more alarming than formerly, for it is well known that the funds for this supposedly domestic loan will come from a "certain country." It was considered bad enough to have that country put in direct contact with the borders of Shansi by means of the proposed new line which would join up almost directly with the Shantung line. But to have Shansi invaded for 175 miles by linking the Cheng Tai line to the Shantung line, as it is conceived this loan would do, passes the patience of the Chinese. It is known that a group of Shansi gentry came to Peking with a proposition to furnish the funds for the redemption of the line from the French providing that the government would give them certain concessions as to rates or equivalent guarantees. It was at this interview that the intention to redeem from the proceeds of the domestic loan was made known by the Minister of Communications.

Equipment and Supplies

Locomotives

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for 2,000 box cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for two second-hand standard gage 65-ton electric locomotives.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is inquiring for second-hand standard-gage locomotives with cylinders 17 in. or 18 in. by 24 in.; weight about 50 tons; driving wheels 56 in. to 60 in. centers.

Freight Cars

SOLAR J. A. DEL, 154 Nassau street, New York, is inquiring for 30 narrow-gage cane cars for export.

THE BALDWIN LOCOMOTIVE COMPANY, Philadelphia, Pa., is inquiring for 50 flat cars for export.

Iron and Steel

THE ILLINOIS CENTRAL has contracted with the Bettendorf Company, Bettendorf, Ia., for the repair of 1,000 steel gondola cars.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC has issued an inquiry for a large number of tools for general shop use, including various types of drilling machines and lathes, among which are three 90-in. locomotive driving wheel lathes.

Miscellaneous

A CONTRACT FOR 60,000,000 FEET B. M. of ties has been closed with English concerns by the Douglas Fir Exportation and Export Company, and the Lewis River Tie Association, of Seattle, Wash. This is in addition to 24,000,000 feet contracted for with English buyers by the Douglas interests some time ago. The entire 84,000,000 feet will be shipped from Washington and Oregon ports to England by way of the Panama Canal.

Signaling

THE GRAND TRUNK has ordered from the General Railway Signal Co., eighteen semaphore signals, model 2A, with accessories, for an automatic block signal installation between West Paris, Me., and Oxford, about 15 miles.

THE MISSOURI, KANSAS & TEXAS has ordered from the Union Switch & Signal Company 111 automatic block signals, style "S," to be installed on the line from Wybark, Okla., southward to McAlester, 154 miles, and from Colbert, Okla., southward about five miles to the Red River. An order also has been given for signals for yard protection at San Antonio, Tex.

THE MAIN SPRINGS OF COMMERCE.—Railroads are the foundation of the vast industrial development which the twentieth century inherited from the nineteenth. It is idle to plan for increase of production as the remedy for high prices if the additional product cannot be marketed. Wipe out railroads and America would sink to the present economic status of Russia, where the cities starve and the farmers produce little more than enough for their own consumption.—*Springfield Republican*.

Supply Trade News

F. J. Foley, general sales agent, and E. McCormick, assistant to the president of the Railway Steel Spring Company, have been elected vice-presidents of the company.

John Gillen, merchant sales manager for the Standard Gage Steel Company, Beaver Falls, Pa., with headquarters at Chicago, has resigned to engage in other business.

The Electric Controller & Manufacturing Company, Cleveland, O., has opened a branch office in Boston, Mass., at 49 Federal street. The new office is in charge of M. D. Goodman.

George W. Clark, who has been in the service of the Northern Indiana Gas & Electric Company, Indianapolis, Ind., has been appointed comptroller of the Union Railway Equipment Company, Chicago.

B. J. Meyer, special representative in the railroad sales department of the Great Western Smelting & Refining Company, Chicago, has recently been appointed assistant to the president

of that company, in charge of railroad sales, with headquarters at Chicago. Mr. Meyer was born in St. Joseph, Mich., on May 19, 1887, and attended the University of Michigan. During the Taft administration he served for four years as a special agent in the department of justice under Attorney General Wickersham. In 1913 he entered the railway supply business as a special representative in the railroad sales department of the Great Western Company and is now appointed assistant to the president of this company.



B. J. Meyer

Herman Rettinghouse, who resigned as chief engineer of the Chicago, St. Paul, Minneapolis & Omaha, on March 1, has entered into partnership with Albert A. Chenoweth, forming the firm of Chenoweth & Rettinghouse, civil and consulting engineers, Sioux Falls, S. Dak.

Ernest S. Jubell, in charge of materials at the plant of the Haskell & Barker Car Company, Michigan City, Indiana, has been appointed general superintendent of the Union Railway Equipment Company, with headquarters at Hammond, Indiana.

The Buda Company, Harvey, Ill., recently completed the construction of an additional foundry, for casting small engine parts. The building is of iron, 160 ft. wide, with concrete foundation. Within 30 days from the signing of the lease for the site the entire work of building and equipping the foundry was accomplished and metal was being poured.

The Superior Screw and Bolt Company has opened new offices at 810 Hippodrome Building, Cleveland. The company, which was recently incorporated, with a capital of \$500,000, intends to manufacture a complete line of tap screws and bolts. Officers of the new corporation are: president, M. T. Jones; vice-president, M. J. Riley; secretary and treasurer, W. J. Hayes.

W. K. Kenly, purchasing agent for the Interstate Iron & Steel Company, Chicago, is now in charge of the Ferro alloys department of the James S. Miller Company, Chicago, dealer

in scrap iron and steel and railway supplies. The Miller Company has the exclusive agency of the United States Ferro Alloy Corporation, New York, the United States Nickel Company, New Brunswick, N. J., and the Guggenheim Mining Company.

The Greenfield Tap & Die Corporation, Greenfield, Mass., has acquired all of the common stock of the **Lincoln Twist Drill Company**, Taunton, Mass. This company manufactures twist drills, reamers and milling cutters. These added to the products of the Greenfield Tap & Die Corporation, give it a complete line of small tools. **Edward Blake, Jr.**, formerly sales manager of Wells Brothers Company, is vice-president and general manager of the Lincoln Twist Drill Company.

George H. Scott, electrical engineer with the O. K. Giant Battery Company, with headquarters at Gary, Ind., has been appointed representative of the Safety Car Heating & Lighting Company, New York, in charge of the Northwestern territory, with headquarters at Chicago. Mr. Scott was born on June 6, 1880, in Pulaski County, Mo., and was educated in the State Normal School. He entered the service of the St. Louis-San Francisco at Springfield, Mo., on February 23, 1899, working in various departments of this road until 1906, when he was appointed foreman electrician, with headquarters at St. Louis, Mo. In December, 1907, he was appointed traveling electrician on the Chicago, Rock Island & Pacific, with headquarters at Chicago, and was later promoted to general foreman in the electrical department. He was appointed foreman electrician with the Pullman Company at Cincinnati, O., on June 1, 1910, with which company he was employed in various capacities until his resignation the early part of this year, to become electrical engineer with the O. K. Giant Battery Company.



G. H. Scott

The Milwaukee Electric Railway & Light Company, after more than two years of continued use of pulverized coal under five boilers in the Oneida street plant, has decided to use this form of fuel in the new Lakeside power plant. The installation will consist of eight 1,306-h.p. Edge-moor water tube boilers. The contract for the drying, pulverizing and transportation equipment has been placed with the **Fuller Engineering Company**, Allentown, Pa. The feeders and burners will be furnished by the **Locomotive Pulverized Fuel Company**, New York. Lopulco duplex feeders with five-inch screws will be used and three Lopulco burners will be installed in each boiler. The feeders will be driven by Morse silent chain and the Reeves type variable speed mechanism.

Effective June 15, 1920, **L. Finegan** has been appointed general manager of the **American Flexible Bolt Company**, with headquarters at Pittsburgh and Zelienople, Pa. Mr. Finegan was born in California. He started his business life as a machinist apprentice in Butte, Montana. At the completion of his apprenticeship he entered the employ of the New York Central at Buffalo, and later the General Electric Company and the American Locomotive Company at Schenectady. Leaving the American Locomotive Company he went with the Delaware & Hudson as general foreman. In 1904 he became general foreman of the West Springfield shops of the Boston & Albany Railroad. In 1911 he entered the service of the Baltimore & Ohio as master mechanic at Glenwood, Pa., and was later appointed superintendent of shops at this point. In 1915 he was appointed superintendent

of the Mount Clare shops, which position he held up to the time of his appointment to the position above mentioned.

Obituary

Thomas C. Davis, a retired manufacturer of railway supplies, died in Philadelphia on March 16. Mr. Davis was born in Philadelphia on July 10, 1843. After receiving his education in private schools, he made a serious study of this work for a number of years and, regardless of his other business activities in later years, he never relinquished his interest in it. In 1860 he went to work with his father in the scale business under the name A. B. Davis & Co., the old original plant now being a part of the Baldwin Locomotive Works in Philadelphia.

Some years later his father, A. B. Davis, formed the Philadelphia Wrench Company to manufacture the A. B. Davis patent wrench, and he was connected with this concern. Again some years later the scale patents were sold to the Fairbanks Scale Company and Mr. Davis joined that organization. In 1883 he joined with his brother, Nathan H. Davis, in manufacturing car springs under the name of the Diamond State Car Spring Company, Wilmington, Del. Three years later, N. H. Davis designed the Davis Pressed Steel Spring Plate and the Davis Spring Plate Company was organized. A year later it began manufacturing larger shapes and reorganized the company and changed the name to the Davis Pressed Steel Company. In 1907 the brothers organized the Davis Solid Truss Brake Beam Company to manufacture a patented type of brake beam, and with this company Mr. Davis remained until he retired in 1913.

Trade Publications

SCRAP IRON.—Briggs & Turivas, Inc., dealers in scrap iron and allied metal products, Chicago, have recently published a 48-page, pocket-size booklet, entitled "Classified Scrap Iron." It contains a classification of various grades of iron and steel scrap as marketed, with tables giving grades and quantities of rails and accessories, net and gross ton equivalents, weights of plates, standard gages, and specific gravities and weights.

Railway Construction

CHICAGO, BURLINGTON & QUINCY.—This company has let contracts to the Ogle Construction Company, Chicago, to build two coaling stations at Buda, Ill., and one each at Clarence, Mo., and Pacific Junction, Ia. They are to be of timber construction, balance bucket type and of 150-tons capacity. These contracts in addition to those noted in the *Railway Age* of May 28 (page 1546) make a total of eight let to the same company by the Burlington.

CHICAGO, ROCK ISLAND & PACIFIC.—A branch line from Chattanooga, Okla., to Grandfield, a distance of fifteen miles, has just been completed and placed in operation.

RINGLING EASTLAND & GULF. This company, whose road has been under construction during the past six months, has announced the completion of 25 miles from Mangum, Tex., where the line connects with the Missouri, Kansas & Texas, north toward Breckenridge, Stephens County. This brings the line to within 10 miles of Breckenridge, the largest non-railroad city in the United States, it having a population of 6,000, paved streets, electric light plant and water works. This line will promote development in the oil industry in this important field at a reasonable transportation cost. When finally completed the line is intended to run from Brownwood on the south to New Castle, Graham or Wichita Falls on the north. The chief office is at Eastland, Tex. W. E. Brown is general manager. The first operating unit of this road, located in the Eastland-Stephens county oil fields, Texas, with 25 miles of line, was opened to freight service on June 1. Passenger service is expected to start June 15.

HE IS FOOLING HIMSELF who thinks that the railroads can be starved without industry in general suffering thereby as well as the railroad stockholders themselves.—*Minneapolis Journal.*

Railway Financial News

CHICAGO & NORTH WESTERN.—This company has declared a semi-annual dividend of 2½ per cent on the common stock, placing the stock on a 5 per cent annual basis, compared with 7 per cent paid heretofore. On the preferred stock the company declared 3½ per cent semi-annual, thus reducing the preferred dividend from 8 per cent to 7 per cent annually. Both dividends are payable July 15 to stock of record June 21.

After the dividend meeting an officer of the Chicago & North Western stated that the rate of dividends on preferred and common stocks had been reduced because, in the judgment of the board, the uncertainties of the present railroad situation made such a course advisable. Referring to the revenue sections of the new transportation act this officer said that such guarantees as were afforded the railroads by those provisions of law were at least not yet of the sort out of which cash dividends could be paid.

EVANSVILLE & INDIANAPOLIS.—This road was sold on June 3 to Garrett T. Townsend and Raymond M. Smith, of New York, representing the bondholders, for \$1,005,000. The Cleveland, Cincinnati, Chicago & St. Louis operates its 142 miles of line.

KANSAS CITY, MEXICO & ORIENT.—The application of this company for a loan of \$3,500,000 out of the \$300,000,000 revolving fund provided in the transportation act was considered at a hearing before the Interstate Commerce Commission on June 3. As security the company offered a first lien on its property, the book value of which was placed at \$28,000,000. The road desires to use \$1,500,000 to pay receivers' certificates due December 1, \$1,000,000 for working capital and betterments, and \$1,000,000 to complete extension of the road from San Angelo, to Sonora, Texas, a distance of 61 miles.

SAN ANTONIO, ROCK SPRINGS & NORTHWESTERN.—This company has awarded a contract for the construction of approximately 160 miles of line from Uvalde, Tex., to San Angelo to James H. Halpin, of San Antonio, Tex.

ST. LOUIS-SAN FRANCISCO.—Speyer & Co. have concluded negotiations with the French government for the purchase of approximately \$21,000,000 of St. Louis-San Francisco Railway Company Bonds, its total holdings consisting of \$5,000,000 4 per cent prior lien "A" bonds; \$5,800,000 6 per cent cumulative adjustment mortgage bonds, and \$10,000,000 6 per cent income mortgage bonds, which is the equivalent of about \$20,000,000 old St. Louis & San Francisco general lien 5 per cent bonds. The latter were bought by the French government at the beginning of the war from French citizens, in order to establish an American credit, and it is understood that, as the price paid for the bonds by Speyer & Co. is very close to the prevailing market price, the French government realizes a large profit on the transaction through the exchange rate. These \$20,000,000 Frisco general lien bonds were placed by Speyer & Co. in France from 1909 to 1913 through their French correspondents. In the reorganization of the road, which was carried through shortly after the appointment of a receiver, the unpaid interest was provided for in full and the bondholders received new securities on which the interest has been paid in full, so that an original bondholder has been receiving 5½ per cent on his investment instead of 5 per cent as specified in the old bond.

ST. LOUIS SOUTHWESTERN.—The Interstate Commerce Commission has announced a hearing on July 8 at St. Louis on the application of the St. Louis Southwestern and the Valley Terminal Company for an order authorizing a lease of March 29, 1920, of the property of the terminal company to the St. Louis Southwestern.

SOUTHERN PACIFIC.—Kuhn, Loeb & Co. are offering an issue of \$15,000,000 four to fifteen year 7 per cent equipment trust certificates at prices ranging from par, for the earlier maturities, to 101, for the later maturities. The issue is made under the Philadelphia plan.

Railway Officers

Executive

George F. Pessoney has been appointed manager of the Texas State Railroad, with headquarters at Palestine, Texas, succeeding **R. M. Wylie**.

Operating

R. W. Ellsworth has been appointed trainmaster of the Ontario division of the New York Central, succeeding **F. J. Towee**, resigned; **C. R. Conklin** has been appointed assistant trainmaster of the same division; **F. B. Greene** has been appointed chief dispatcher also of that division. All appointments became effective June 1.

W. D. Post, who has been appointed superintendent of the Southern, with headquarters at Columbia, S. C., as noted in the *Railway Age* of May 7 (page 1384), served as trainmaster



W. D. Post

of the Knoxville division from June, 1918, until the termination of federal control. Mr. Post was born on March 8, 1875, at Shelby, Ohio. He received a public school education at Shelby and finished with a business course at Galion, Ohio. He began railroad work as clerk in the local freight office of the East Tennessee, Virginia & Georgia, now part of the Southern, at Newcomb, Tenn. Having served as telegraph operator and agent at Harriman, Morristown, Whitesburg and Knoxville,

Tenn., respectively, he was appointed trainmaster of the Appalachia division at Bristol, Tenn., on April 1, 1917. He was transferred to the Knoxville division at the time mentioned above.

R. E. Weaver, trainmaster of the Louisville & Nashville at Birmingham, Ala., has been transferred to the Birmingham-Boyles Terminals, succeeding **John Mathews**, resigned; **H. W. Milam** has been appointed assistant trainmaster of the same territory; **E. J. Smith**, trainmaster at Anniston, Ala., has been transferred to Birmingham, succeeding Mr. Weaver; **H. P. Hearon** has been appointed assistant trainmaster, with the same headquarters; **S. J. Brock**, chief dispatcher between Boyles and Anniston and between Anniston and Calera, has been appointed trainmaster at Anniston, succeeding Mr. Smith, and **Q. C. L. Knox** has been appointed chief dispatcher, succeeding Mr. Brock.

Victor Parvin, whose appointment as superintendent of the Ann Arbor, with headquarters at Owosso, Mich., was announced in the *Railway Age* of May 14 (page 1434), was born at Laurel, Del., on July 6, 1883. He entered railway service as a telegrapher with the Baltimore, Chesapeake & Atlantic, in November, 1899. Two years later he became agent and operator on the New York, New Haven & Hartford. From 1902 to 1904 he served as dispatcher with the Baltimore, Chesapeake & Atlantic, with headquarters at Salisbury, Md. During the next four years he served as operator and dispatcher on the Southern, and in 1908 was appointed chief dispatcher on the New York, New Haven & Hartford, with headquarters at New Haven, Conn. In 1912, he became chief

despatcher and trainmaster on the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn. From February to June, 1917, he served as car distributor in the office of the general superintendent of transportation of the Southern, with headquarters at Cincinnati, Ohio, and from June to December in the same year was yardmaster with the Baltimore and Ohio at Newark, Ohio. He was later appointed trainmaster on the Virginian, with headquarters at Princeton, W. Va., and served successively on this road as trainmaster, assistant superintendent and superintendent until May, 1920, when he was appointed superintendent on the Ann Arbor.

Traffic

R. L. Sliger has been appointed division passenger agent on Morgan's Louisiana & Texas Railroad, with headquarters at New Orleans, La., effective June 1.

Roy Pope has been appointed assistant general freight agent of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., effective June 1.

Alexander D. Charlton, assistant general passenger agent on the Northern Pacific, with headquarters at Portland, Ore., has been promoted to general passenger agent, with the same headquarters. Mr. Charlton was born at Hamilton, Ont., on November 15, 1859, and graduated from Hamilton College in 1875. He entered railway service as a clerk in the auditor's office of the Great Western of Canada in February, 1876. One year later he was placed in charge of the return ticket office of the Chicago & Alton, with headquarters at Chicago. During seven years of service with the last named road he was successively in charge of the return ticket department, of issuing tickets and finally was promoted to rate clerk. He was appointed general western passenger agent on the Northern Pacific on February 15, 1884. He was later promoted to assistant general passenger agent, which position he held until his present appointment.



A. D. Charlton

R. L. Fuqua, who has been appointed assistant general passenger agent of the Alabama & Vicksburg and the Alabama, Shreveport & Pacific, with headquarters at Vicksburg, Miss., as noted in the *Railway Age* of April 16 (page 1223) served as passenger rate clerk of the Southwestern Passenger Association from 1915 until the termination of federal control. Mr. Fuqua was born on February 6, 1884, at St. Joseph, Mo. He began railroad work in 1900 as passenger rate clerk for the Chicago, Burlington & Quincy. From then until his recent promotion he served in the same capacity on the following roads: The El Paso & Northeastern, now part of the El Paso & Southwestern, from 1904 until 1905; the Union Pacific, from 1905 until 1907; from then until 1910 he served the Missouri, Kansas & Texas of Texas, and went from that road to the Texas & Pacific, in whose service he remained until 1914, when, as noted above, he became associated with the Southwestern Passenger Association.

E. R. Oliver, who has been appointed general freight agent of the Southern with headquarters at Cincinnati, Ohio, as noted in the *Railway Age* of March 5 (page 750) served as assistant general freight agent with headquarters at Atlanta, Ga., from 1916 until the termination of federal control. Mr. Oliver was born in Lafayette County, Miss., on February 25, 1883. He began railroad work on September 1, 1898, as clerk in the local office of the Southern at Greenville, Miss. He held other clerical positions until 1903, when he was appointed agent at Greenwood, Miss. He became traveling freight agent at Chicago on January

1, 1906, and in 1907 he was transferred to Louisville, Ky., as soliciting freight agent. In 1910 he was appointed chief clerk in the office of the assistant freight traffic manager at Louisville. He was promoted to assistant general freight agent on June 1, 1912, and in 1916 he was transferred to Washington, D. C. Shortly afterwards he was assigned to the general freight office at Atlanta.

Lawrence W. Woody, who has been appointed assistant general passenger agent of the Virginian, with headquarters at Norfolk, Va., as noted in the *Railway Age* of March 5 (page 735), served as chief clerk to the general freight and passenger agent from February, 1909, until the termination of federal control. Mr. Woody was born on April 23, 1869, at Richmond, Va. He received a public school education and began railroad work in September, 1889, as mailing clerk for the Richmond & Danville, now part of the Southern. Afterwards he was promoted to file and correspondence clerk. In May, 1900, he accepted the same position in the general passenger department of the Seaboard Air Line at Portsmouth, Va. He left the Seaboard Air Line in August, 1907, when he was appointed chief clerk in the passenger department of the Norfolk Southern. He remained in that position until 1909, when, as noted above, he became chief clerk to the general freight and passenger agent of the Virginian.



L. W. Woody

Thomas W. Proctor, whose promotion to general freight agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, was announced in the *Railway Age* of May 28 (page 1547), entered railway service as a clerk in a local freight office on the Burlington, Cedar Rapids & Northern (now a part of the Rock Island) in 1885. Four years later he was appointed clerk in the general freight department. Five years later Mr. Proctor entered the service of the Chicago, Milwaukee & St. Paul in the freight claim department. In 1898 he was promoted to traveling claim agent. From 1905 to 1910 he successively served as contract freight agent, with headquarters at Minneapolis, and as traveling freight agent with headquarters at Kansas City. In 1910 he was appointed assistant commercial agent, with headquarters at Chicago. He was appointed to assistant general agent in 1912, and one year later was promoted to general agent. In 1917 Mr. Proctor was transferred to Minneapolis as assistant general freight agent and in the latter part of that year returned to Chicago in the same capacity. During the period of federal control Mr. Proctor was successively supervisor of merchandise in the Northwestern region and then regional fuel administrator of the same region. When the roads were returned he was made first assistant general freight agent of the St. Paul.



T. W. Proctor

Warren Brown has been appointed general agent of the El Paso & Southwestern and the Morenci Southern, with headquarters at Memphis, Tenn., effective June 1; **J. G. Lowe** has been appointed general agent, with headquarters at Kansas City, Mo., effective the same date.

Warner W. Croxton, who has been appointed passenger traffic manager of the Atlanta, Birmingham & Atlantic with headquarters at Atlanta, Ga., served as chairman, Standing



W. W. Croxton

Committee for the South, agricultural section of the Railroad Administration, during the greater part of federal control. Mr. Croxton was born in King William County, Va., on August 25, 1880. He was educated in the public schools of Richmond, Va., and began railroad work in 1900 as stenographer in the local freight traffic office of the Southern at Richmond. In 1901 he was promoted to division freight agent at Columbia, S. C., but he returned to Richmond in 1902 as chief clerk in the office of the division passenger agent and a few months later he became secretary to the general passenger agent at Washington, D. C. On February 1, 1904, he was appointed passenger agent of the Southern and Chesapeake Steamship Company at Norfolk, Va. He was promoted to traveling passenger agent of the Southern at New York on October 1, 1905, and on April 1, 1907, was transferred to Norfolk, Va., in the same capacity, again serving in addition the Chesapeake Steamship Company. Later he occupied that position at Baltimore, Md. He went to the Norfolk Southern in 1909 as assistant general passenger agent at Norfolk, Va. On October 1, 1910, he was promoted to general passenger agent in charge of passenger traffic and agricultural development service. He accepted the same duties with the Atlanta, Birmingham & Atlantic in 1913 and continued in that position during the early days of federal control, but together with the Atlanta, Birmingham & Atlantic, he also served the Atlanta & West Point, the Western of Alabama, the Georgia, and the Charleston & Western Carolina. He was then appointed chairman of the committee named above.

The traffic department of the Los Angeles & Salt Lake has made the following appointments, effective May 1:

Name	Position	Headquarters
Alex. D. Fraser...	Gen. agt.	Pittsburgh, Pa.
J. P. Thomas....	Gen. agt.	Chicago
Wm. Warner.....	Gen. agt.	St. Louis, Mo.
W. H. Lee.....	Asst. gen. fr. agt.	Salt Lake City
C. H. Cutting....	Asst. gen. pass. agt.	Salt Lake City
C. S. Browne....	Gen. agt.	San Francisco, Cal.
C. C. Jewett.....	Gen. agt.	San Diego, Cal.
C. E. Emerson....	Gen. agt.	Pasadena, Cal.
J. H. Burtner....	Dist. fr. & pass. agt.	Riverside, Cal.
C. E. Redman....	Dist. fr. & pass. agt.	San Pedro, Cal.
Marius de Brabant	Asst. gen. tr. mgr.	Los Angeles, Cal.
T. M. Sloan.....	Gen. fr. agt.	Los Angeles, Cal.
W. F. Lincoln....	Asst. gen. fr. agt.	Los Angeles, Cal.
T. C. Peck.....	Gen. pass. agt.	Los Angeles, Cal.
L. M. Brown.....	Asst. gen. pass. agt.	Los Angeles, Cal.
Frank H. Adams..	Gen. agt.	Los Angeles, Cal.
B. M. Jones.....	Dist. fr. agt.	Los Angeles, Cal.
John Cruickshank	Gen. agt.	Los Angeles, Cal.
C. A. Redmond...	Dist. pass. agt.	Los Angeles, Cal.

Roscoe J. Doss, who has been appointed assistant general freight agent of the Atlantic Coast Line, with headquarters at Wilmington, N. C., as noted in the *Railway Age* of May 28 (page 1548), served as a member of the staff of the Southern Freight Traffic Committee of the Railroad Administration during federal control. Mr. Doss was born on March 30, 1884, at Canton, Ga. Having graduated from Etowah Insti-

tute in Canton, he began railroad work on September 1, 1900, as clerk for the Atlanta, Knoxville & Northern, now part of the Louisville & Nashville. Afterwards he served as telegraph operator and was appointed agent in January, 1904. The following year he became overcharge claim investigator in the office of the freight claim agent of the Southern at Washington, D. C. He returned to the Atlanta, Knoxville & Northern in 1906 as local agent at Canton. In 1908 he entered the general freight office of the Louisville & Nashville at Knoxville, Tenn., and a few months later was transferred to Louisville, Ky., as rate clerk, in which capacity he served until 1913, when he was appointed chief rate clerk in the general freight office of the Atlantic Coast Line at Savannah, Ga. Promoted to chief clerk in July, 1914, he was appointed assistant to the general freight agent, with headquarters at Wilmington, N. C., in December, 1916. He held that position until the establishment of federal control.

Mechanical

L. K. Sillcox, master car builder of the Chicago, Milwaukee & St. Paul at Milwaukee, Wis., has been appointed assistant general superintendent motive power, with headquarters at Chicago, Ill., effective June 1.

C. B. Young, manager of the Test Section of the United States Railroad Administration, has been reappointed mechanical engineer on the Chicago, Burlington & Quincy, with headquarters at Chicago, effective June 1.

George F. Hess, superintendent of machinery of the Kansas City Southern, has been appointed superintendent motive power of the Wabash, with headquarters at St. Louis, Mo., effective June 1, succeeding **E. F. Needham**, relieved of those duties at his own request because of ill health.

George H. Emerson, who has been appointed chief of motive power and equipment of the Baltimore & Ohio with headquarters at Baltimore, Md., as noted in the *Railway Age* of March 5 (page 737), served as Colonel of Engineers of the U. S. Army in charge of the organization of the Russian Railway Service Corps from October 20, 1917, until shortly before his appointment to the above-mentioned position on March 1. Mr. Emerson was born on August 12, 1869, and began railroad work with the Great Northern in 1880 as water boy. In 1883 he became boilermaker apprentice at St. Paul, Minn. He became journeyman boilermaker in 1887, and in 1891 fireman and engineer. From 1895 until 1897 he served as



G. H. Emerson

locomotive foreman at Glasgow, Mont. He was then appointed general shop foreman and master mechanic. He was promoted to general master mechanic in 1900 and in 1910 to assistant general manager. He was appointed general manager in 1912. Throughout the entire period covered by these various promotions, Mr. Emerson served the Great Northern. As noted above he entered government service and was assigned to Russia shortly after the entrance of our country into the late war.

Engineering, Maintenance of Way and Signaling

H. S. Rogers has been appointed division engineer of the Susquehanna division of the Delaware & Hudson, with headquarters at Oneonta, N. Y., succeeding **J. M. Silliman**, resigned.

Frank D. Nash, until recently chief engineer of the Missouri and North Arkansas, has been appointed assistant valuation

engineer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo.

E. G. Stradling, signal engineer of the Chicago, Indianapolis & Louisville, with headquarters at Lafayette, Ind., whose promotion to superintendent of telegraph and signals was announced in the *Railway Age* of May 28 (page 1548), was born in Indianapolis, Ind., on September 15, 1880. He was educated at Purdue University, graduating from the mechanical engineering department in 1905. He entered railway service in the same year and has held various positions in the engineering departments of the Baltimore & Ohio Southwestern and the St. Louis, Iron Mountain & Southern. Prior to entering the service of the Monon he was also engaged in construction work for the General Railway Signal Company on the Illinois Central and with the Union Pacific as signal construction foreman on the installation of automatic block signals from 1906 to 1908. On May 1, of the latter year, he was appointed signal inspector on the Chicago, Indianapolis & Louisville, in which capacity he had charge of the signal department, and on May 1, 1911, he was given the title of signal engineer, which position he held until his recent promotion as noted above.



E. G. Stradling

W. W. K. Sparrow, assistant chief engineer on the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed assistant to the president, succeeding H. M. Sloan, who resigned, effective June 1. Mr. Sparrow was born in Ireland on December 30, 1879, and was educated at Rossall, England. In 1896, he passed the examination prescribed by the Institute of Civil Engineers at London, and during the same year he entered the service of the Belfast & Northern Counties Railway (Ireland), remaining with that company until 1898, when he went to South Africa to engage in railroad location, construction and maintenance work on the Cape Government Railways and the Chartered Company of Rhodesia. From February, 1909, to July, 1912, he was in the employ of Waddell & Harrington, consulting engineers at Kansas City, Mo., as a detailer, checker and designer. From the latter date until September, 1913, he was associated with H. von Unwerth, consulting engineer at Kansas City, Mo. From September, 1913, to April 1, 1916, he was assistant chief engineer of the Missouri State Public Service Commission, and on March 20, 1916, he was appointed valuation engineer and member of the valuation committee of the Chicago, Burlington & Quincy. September 1, 1918, he was appointed chief engineer in charge of the corporate interests of the Chicago, Milwaukee & St. Paul, and on March, 1920, became assistant chief engineer in charge of valuation work, the position he held at the time of his promotion to assistant to the president.



W. W. K. Sparrow

A. A. Matthews, chief engineer of the St. Louis-Southwestern, with headquarters at Tyler, Tex., has been placed in charge of all maintenance work, the office of engineer of maintenance having been abolished. Other appointments are: **C. B. Petticrew**, division engineer, Illmo, Mo.; **W. H. Raleigh**, division engineer, Pine Bluff, Ark.; **J. F. Montgomery**, division engineer, Mt. Pleasant, Tex.; **R. B. Albaugh**, division engineer, Tyler, Tex.; **J. G. Irby**, assistant engineer, Mt. Pleasant, Tex.; **V. C. Noll**, assistant engineer, Tyler, Tex.; **W. G. Hazlewood**, assistant engineer, Illmo, Mo.

Milo M. Backus, whose promotion to district engineer of the Western lines of the Illinois Central, with headquarters at Waterloo, Iowa, was announced in the *Railway Age* of May 28 (page 1548), was born at Clinton, Iowa, on April 3, 1880. He was educated at Cornell College, Iowa, and entered railway service as a chairman with the Illinois Central on April 20, 1902. From April, 1902, to August, 1906, he served successively in the construction department as chairman, rodman and instrument man. Upon the latter date he became assistant engineer and served in this capacity on the Kentucky division until December, 1912. During the next two years he served as supervisor of track on the Carbondale district of the St. Louis division and upon the Paducah district, Kentucky division, with headquarters at Carbondale, Ill., and Princeton, Ky., respectively. In November, 1914, he was promoted to roadmaster of the Springfield division and in June, 1917, was transferred to the St. Louis division of the same road, where he was located at the time of his recent promotion.

Railroad Administration

C. S. Lake, formerly assistant to the director of the Division of Operation, has been appointed staff officer of the Railroad Administration.

Obituary

George W. Vaughan, engineer maintenance of way of the New York Central, exterior zone, lines east of Buffalo, with headquarters at New York, died on June 5 at the Mt. Vernon hospital, Mt. Vernon, N. Y. Mr. Vaughan was born in 1859 at Paucutuck, Conn. He was educated in the Warner Polytechnic School at Providence, R. I., and began railroad work in 1881 as rodman for the Pittsburgh, Cincinnati & St. Louis. Afterwards he served as assistant to the engineer maintenance of way, supervisor of track, third sub-division, and assistant engineer maintenance of way, respectively. From April, 1887, until February, 1889, he was assistant to the division engineer eastern division of the New York, Chicago & St. Louis. He was then promoted to division engineer and later to chief engineer in charge of all property, reconstruction and maintenance of way. He went to the New York Central & Hudson River in 1899 as supervisor bridges and buildings of the eastern division. He was transferred to the Pennsylvania division as division engineer in December, 1900, and the following year to the western division. On July 1, 1905, he was promoted to engineer maintenance of way of the same road, which has since become part of the New York Central.

WONDERS WILL NEVER CEASE! Long Island Railroad Commuters, at a public meeting in Islip, N. Y., on June 5, adopted a resolution asking the New York State Public Service Commission to authorize the railroad to increase season-ticket rates. —*Brooklyn (N. Y.) Eagle*. [But in very guarded language: the meeting recommended to the Public Service Commission "that the Long Island Railroad Company be permitted to revise its tariffs so as to bring about a financial condition that will enable the company to provide for needed improvements and good service; * * * the Long Island Commuters' Association indorses the program of the railroad company to the extent that if the Public Service Commission after investigation proves that the company needs the relief which it seeks, prompt measures be taken to approve the revised tariffs as submitted by the company.]